TECHNOLOGY DEPT.

AUGUST, 1949

# Flow

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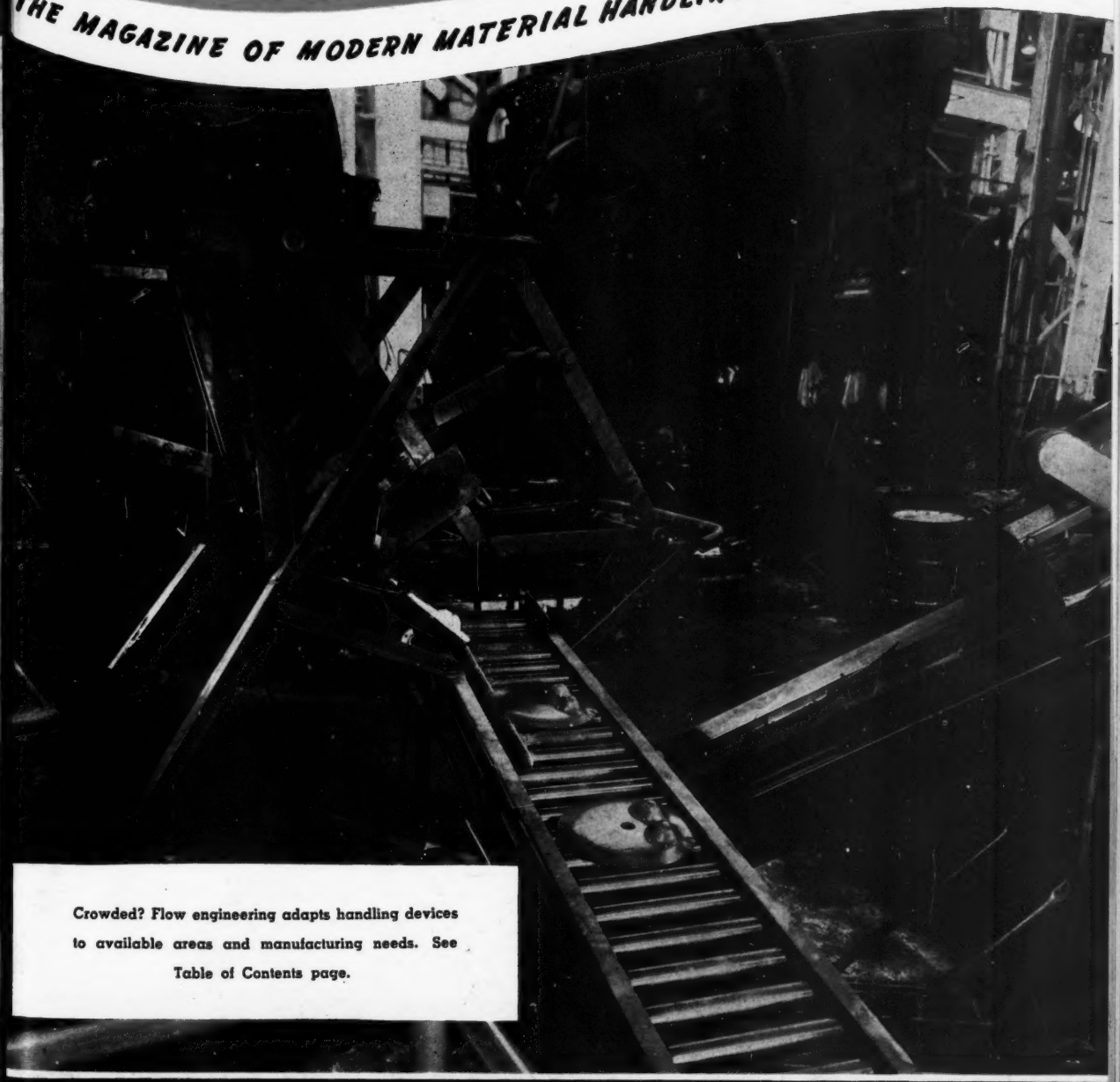
THE MAGAZINE OF MODERN MATERIAL HANDLING AND PACKAGING METHODS



Crowded? Flow engineering adapts handling devices to available areas and manufacturing needs. See Table of Contents page.

## IN THIS ISSUE:

Assembly For Easy Handling . . . Electric Crane Specifications . . . Halving The Cost . . . Millions Of Pounds By Monorail . . . Headroom Gives Added Space

# You've put your finger on it—

# "Dependable"

You can say that again, Mister!

Wherever you see the Hevi-Lift, it's the same reliable workhorse — always ready to take over the heavy loads at the press of a button. You lift and transport anything up to 15 tons . . . and with 5-step variable speed control if you want it.

That's why hoist-wise buyers insist upon the Hevi-Lift for the vital jobs in production — to move their loads in less time, with less effort, at less cost.

The important point is this — the Hevi-Lift is *dependable*. Another product of P&H — America's largest builder of overhead materials handling equipment.

**Handle it "thru-the-air" at lower cost!**

CAPACITIES UP TO 15 TONS

These ADDED VALUES are Standard Equipment on P&H Hevi-Lifts
SAFER — P&H's true motor ratings insure against failure at full capacity loads and speeds. Thermal overload protection prevents motor burn-outs. Control current reduced to 110 volts at push-button. Crane-type limit switch and double brakes provide maximum safety.
LIFETIME CONSTRUCTION —Precision construction . . . shrouded gears . . . grease sealed bearings . . . moisture, dust and acid-proof.
SMOOTHER OPERATION— Motor specifically built for hoist service; high starting torque, frequent reversal. Controls loads within a fraction of an inch.
RAISE

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**HARNISCHFEGER CORPORATION**

HOISTS · WELDING ELECTRODES · MOTORS · EXCAVATORS · ELECTRIC CRANES · ARC WELDERS

# How to Give Your Boss Relief from "COST-ITIS" Headaches and Get Yourself a Raise!

How about doing your boss a favor, and a good turn for yourself, at the same time? We mean a *money-saving* favor for your boss, and a money-*making, salary-raising* boost for you.

Your boss needs the answers to a lot of 64 dollar questions right now. Answers, like what to do about profits being squeezed, prices under pressure, sales declining, costs already cut to the bone, but *still too high.*

And the biggest headaches of *all,* are his *"COST-ITIS" HEADACHES!* Give him relief from that dizzy problem, and he will know how to lick the others.

But often your boss can't see the forest for the trees. So we're tipping you off to a cost-cutting way he *ought* to know about, but often *doesn't,* because somebody in the plant took him too literally, when he said: "No more capital expenditures."

*That way,* is the material handling Automatic Electric Truck way that can *cut your material and product handling costs* AS MUCH AS HALF!

If you're using antiquated, manual handling methods of *lifting* and *moving* your products, it's a cinch that amazing, low original cost Automatic Electric Trucks are just what you and your boys need to lighten your work and go home at night practically daisy fresh.

And for the boss, it's the" COST- ITIS" *headache relief* he will happily pay off on, and the *payee* might as well be *you!*

So mail the coupon, and get all the money-saving facts about these famous industry-tested electric trucks. Find out how, with effortless, easy finger-tip-control, they lift, move and stack hundreds of pounds or tons and tons so easily, a stenographer could operate them in a breeze.

Yes, these mighty giants of electric power *do all the work.* One man accomplishes as much as three men doing fatiguing *manual* handling. The other two can be moved to more productive, *better paying* jobs.

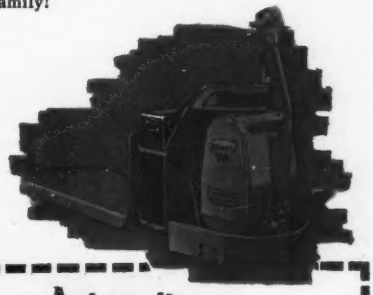
That's *cost cutting* that pays off for *everybody!*

So, before the boss says: *"There must be something wrong here, boys,"* give him the Automatic Electric Truck money-saving story. When you show him literally thousands of dollars he can save *without* cutting wages, and *without* layoffs, he will take back that order: "Lay low on capital expenditures."

Because, as *you* and *he* can see, cutting material handling costs with Automatic Electric Trucks is not a capital expenditure, but a money-maker for *everybody* . . . management, white collar workers, and labor.

So again we say: mail the coupon, read up on the fascinating facts we give you, and then trot upstairs and really show the boss *something!* He will listen, he will be amazed, he will buy.

And start planning now, *all the extras* that *RAISE* will bring you and your family!



Automatic
ELECTRIC TRUCKS
Lightens LIFE'S LOADS

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

Trade Automatic Mark
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Please send me complete money-saving facts on amazing Automatic Electric Trucks without obligation.

*Company Name*.....
*By*.....*Position*.....
*Street Address*.....
*City*.....*Zone*....*State*.....

NEW

# GOULD "Z" Plate

## THE ONLY PLATE WITH OXIDE THAT RENEWS ITSELF!

Only Gould gives you a power-producing regenerative oxide that renews its energy every day the battery is in use.

And—Only Gould's revolutionary, new "Z" grids are non-porous and solid all the way through.

The "Z" plate is the result of new techniques developed and perfected in the Gould Research Laboratory and proved in Gould's own pilot plant.

These exclusive Gould developments are why Gould batteries move more tons more miles . . . operate at full capacity more months . . . give more for your battery dollar than ever before.

Ask for literature on how Gould's new research developments make Gould Batteries Stay New, Longer.

The Gould "Dairy" . . . More Than Ever, America's Finest Industrial Truck Battery

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STORAGE BATTERY CORPORATION

TRENTON 7, NEW JERSEY

*Always Use Gould Automobile and Truck Batteries*

Flow

VOL. 4, NO. 11 • AUGUST, 1949

IRVING B. HEXTER, Pres.
LESTER P. AURBACH, V. Pres.

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Flow Magazine is affiliated with the Industrial Publishing Company, which also publishes:

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COVER PHOTO—Sound flow engineering maintains maximum production per square foot of manufacturing space. Pantograph unloads (brake housing plates) from press; portable conveyor (right) removes outside scrap; 3"x48" speeder belt at head of gravity rollers provides positive take-away for parts. Watch for full report in next month's issue. *Courtesy, The Budd Co., Detroit.*

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FLOW is indexed regularly by Engineering Index, Inc.

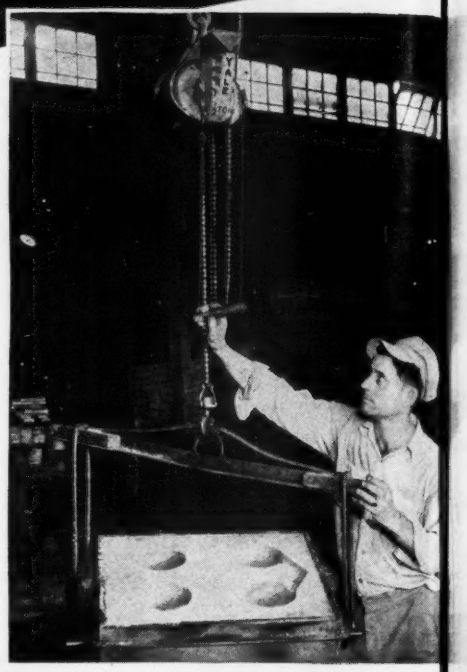
SUBSCRIPTION RATES

United States and possessions—
$3.00 per year, $5.00 for 2 years,
$6.50 for 3 years.

Canada—$4 per year, $6.00 for 2 years.
Foreign—$5.00 per year.
Single copy price—30 cents.

"Acceptance under the act of June 5, 1934, at Milwaukee, Wisconsin, authorized August 15, 1947."

# move fast...save fast!



Production is material in *motion*, but *commotion* rules in many plants because handling practices have not kept pace with processing efficiency. That's why fully 30% of every manufacturing dollar is still spent to lift and move materials.

With selling prices on the decline, it's time to cut costs where you can cut the most: *in material handling!* How? Put Yale Material Handling Machinery to work saving time and effort, stepping up handling efficiency, injecting new economy and safety into every receiving, processing, weighing, warehousing and shipping operation.

Yale Hand and Electric Hoists, Hand Lift and Power Trucks and Scales are built in types and capacities for every need in every industry. Results prove that Yale equipment moves *fast*, saves *fast*. It can do the same for you. Let us check your handling routine and recommend ways to give you the economy you want. Phone our nearby representative or write direct.

**YALE**
TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

**THE YALE & TOWNE MANUFACTURING CO.**
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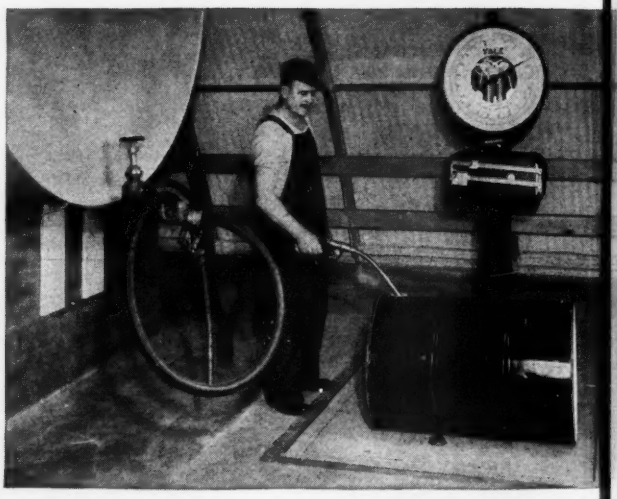
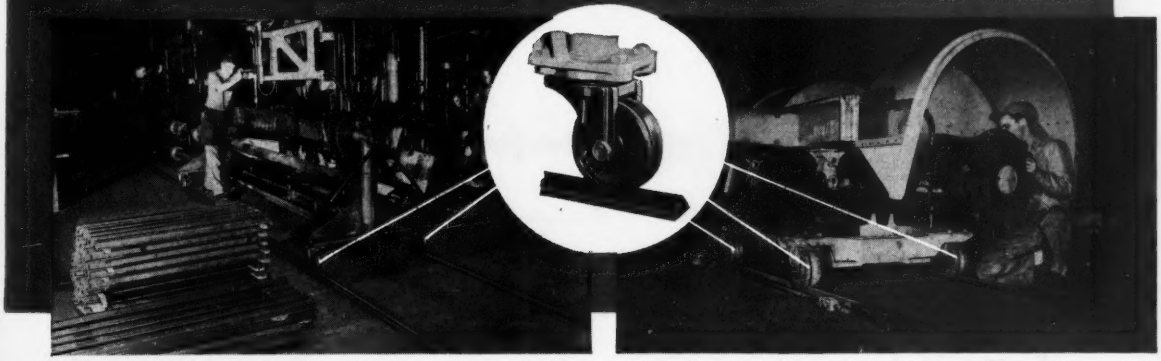


YALE

MATERIAL HANDLING MACHINERY

# Until they get their own wheels they ride on BASSICK GROOVED-WHEEL CASTERS

Marmon-Herrington's 12-station preliminary assembly line. Underframes are assembled at stations 1 and 2, on fixed alignment blocks. Dollies with Bassick Grooved-Wheel Casters on angle iron track carry the coach-units from station 3 to station 12 (foreground) and from there through the paint booth at left to the final assembly line.



**Drilling full-length sills for coach underframes is done in a jig on a special carriage, moving along floor track. Carriage consists of two units, each supported by four Bassick Grooved-Wheel Casters.**

**Dollies feed complete front and rear Timken axle assemblies to coach-units at assembly station. Ramps in foreground show how easily the dollies, on their Grooved-Wheel Bassick Casters, are guided from floor to angle iron track.**

In its manufacture of trolley coaches, Marmon-Herrington relies on Bassick Grooved-Wheel Casters running on angle iron floor track for important economies in assembly operations.

With a three-fold job of moving units along the preliminary line, feeding sub-assemblies at progressive work stations, and switching units from progressive to final assembly lines, Marmon-Herrington's Bassick installation is a striking example of the flexibility that is saving time, space and money in industries of every type, all over the country.

A Bassick Grooved-Wheel Caster System costs surprisingly little to install, maintain or re-locate. Why not find out just how this simple, flexible, economical method can benefit your own materials-handling or assembly operations? Write to THE BASSICK COMPANY, Bridgeport 2, Conn. DIVISION OF STEWART-WARNER CORPORATION. *In Canada:* BASSICK DIVISION, Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ontario.

***The industries that prize The Bassick Grooved-Wheel System Would open up your eyes— If I had space to list 'em!***

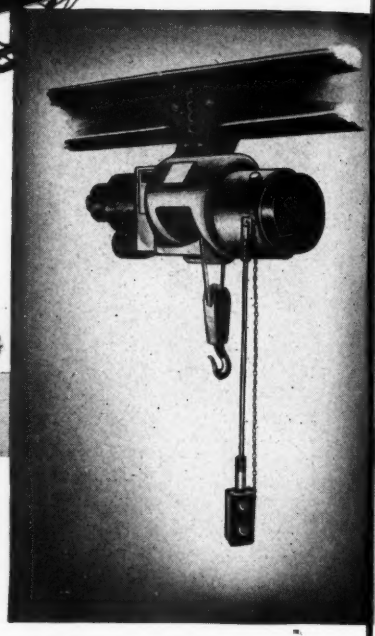
***Sold by Leading Industrial Distributors***

**Bassick**

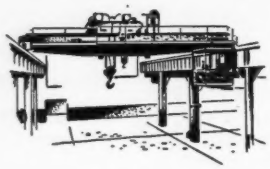
*Making more kinds of Casters... Making Casters do more*

# Giant gantry or handy hoist . . .

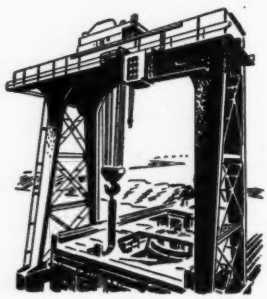
**WORLD'S LARGEST CRANE,** installed in Hunter's Point Navy Yard at San Francisco, Cal., is equipped exclusively with General Electric crane and hoist motors and controls.



**SMALL INEXPENSIVE HOISTS,** now being made in ¼, ½ and 1-ton sizes, depend on electric motors and control for speed and efficiency.

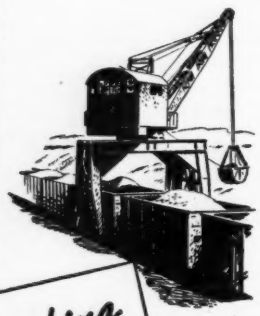


general-purpose crane

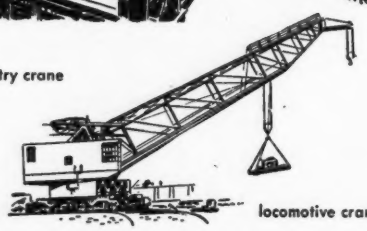


gantry crane

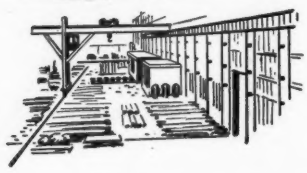
overhead bucket crane



portal crane



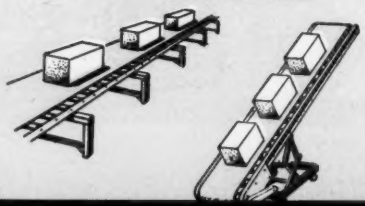
locomotive crane



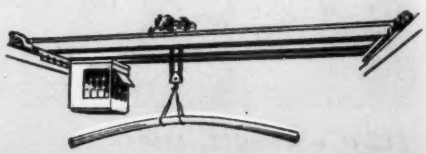
semi-gantry crane

*Everything electrical* for MATERIALS HANDLING

CONVEYOR DRIVES



CRANE DRIVES



# POWERED by G.E.

## TO HELP CUT YOUR MATERIALS HANDLING COSTS

As a manufacturer or a user of industrial cranes or hoists, you are concerned with the selection of the right drive for the equipment. General Electric may be able to help increase the performance of your unit, save you money, or both. While a detailed study by our engineers will be needed to show you how much and in what way, here are two facts worth remembering:

**FACT #1**—General Electric's experience covers the *entire field* of electric crane and hoist drives—from a 500-ton crane to 200-pound hoists.

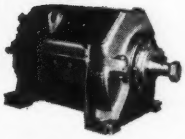
**FACT #2**—General Electric offers a *complete* line of electric equipment for cranes or hoists—to operate from a-c or d-c power systems.

For these reasons, General Electric is particularly well suited to work with you on electrification of any crane or hoist—or any piece of materials handling equipment. Find out for yourself now by calling in a representative from your nearest General Electric office. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

## *SEE* this modern materials handling program

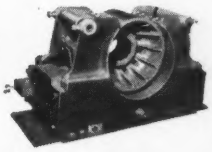
Ask your materials handling equipment supplier or G-E representative to show you "Materials Handling—In Receiving, Warehousing and Shipping"—General Electric's authoritative new movie covering in detail the latest techniques and equipment, without sales bias. When you see the movie, you will receive a copy of the 92-page technical manual which supplements the film. ***ASK TO SEE THIS PROGRAM NOW!***

## D-C CRANE & HOIST DRIVES

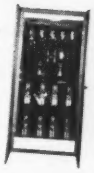


**Type MD 600 Motors** for trolley, travel and hoist drive, are sturdy, dependable units, built for long life under tough conditions. Other d-c motor types are available to completely cover all crane applications.

***NEW*** **D-C Two-Magnet Brake** provides fast, sure action, yet occupies little space; is simple and easy to maintain.



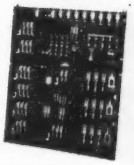
***NEW*** **D-C Magnetic Control** with dynamic braking provides fast and accurate performance with maximum safety, for the toughest, most exacting duty. For every d-c crane, drum, master, and limit switches, protective panels and resistors are available as required.



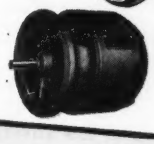
## A-C CRANE & HOIST DRIVES

**Tri-Clad Type MR** slip-ring motors are widely used for driving cranes and hoists from a-c power supply. Types KR and KG high-torque squirrel-cage motors are available where constant speeds are satisfactory.

**A-C Controls.** General Electric offers both magnetic and manual control, Thrustor brakes, resistors, master, drum, and limit switches. Max-speed and other adjustable-voltage controls available for special jobs.



## UNIT HOIST DRIVES

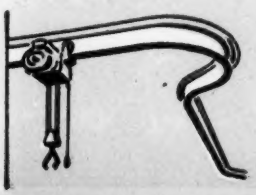


**A complete line** of a-c and d-c motors is available for mounting as an integral part of small industrial hoists.

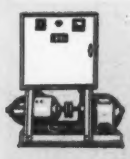
# GENERAL ELECTRIC

668-71

**HOIST DRIVES**



**INDUSTRIAL TRUCK DRIVES & BATTERY CHARGERS**



# MIRED... in waste motion?

The camera tells the story! It costs time and money to move materials by hand. The light streaks are the camera's record of wasted motion . . . made by attaching a light bulb to the worker's wrist.

No waste motion here! With the low-cost Barrett Lift-truck, it's a simple, one-man job! Heavy loads are lifted easily . . . lowered gently by hydraulic check.

## *Put the Skids under it!*

## THE THRIFTY BARRETT WAY!

It's pretty tough to save money if you have to plod along with outmoded handling methods. What a difference the modern Barrett System makes!

With Barrett Lift-trucks and Skids, materials are simply left on the skids . . . in and out of storage, from room to room, and floor to floor! Zip! A sweep of the Lift-truck handle —and the load's ready to move. It eliminates all the loading and unloading, piling and unpiling. In fact, materials are moved so quickly and smoothly that *one man with a Barrett can actually outwork three or four!*

Get full information today.

*Write today for your free copy of the Barrett Junior Catalog—chuck-full of cost saving ideas.*

**BARRETT-CRAVENS COMPANY**

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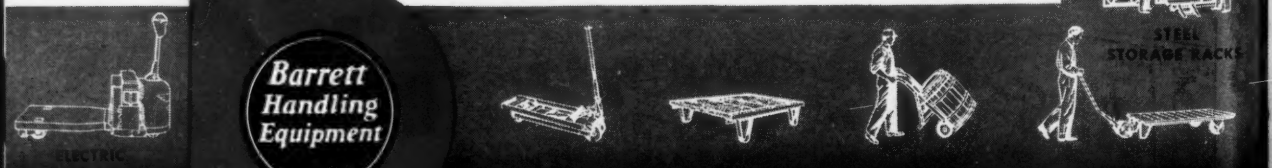
# BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT



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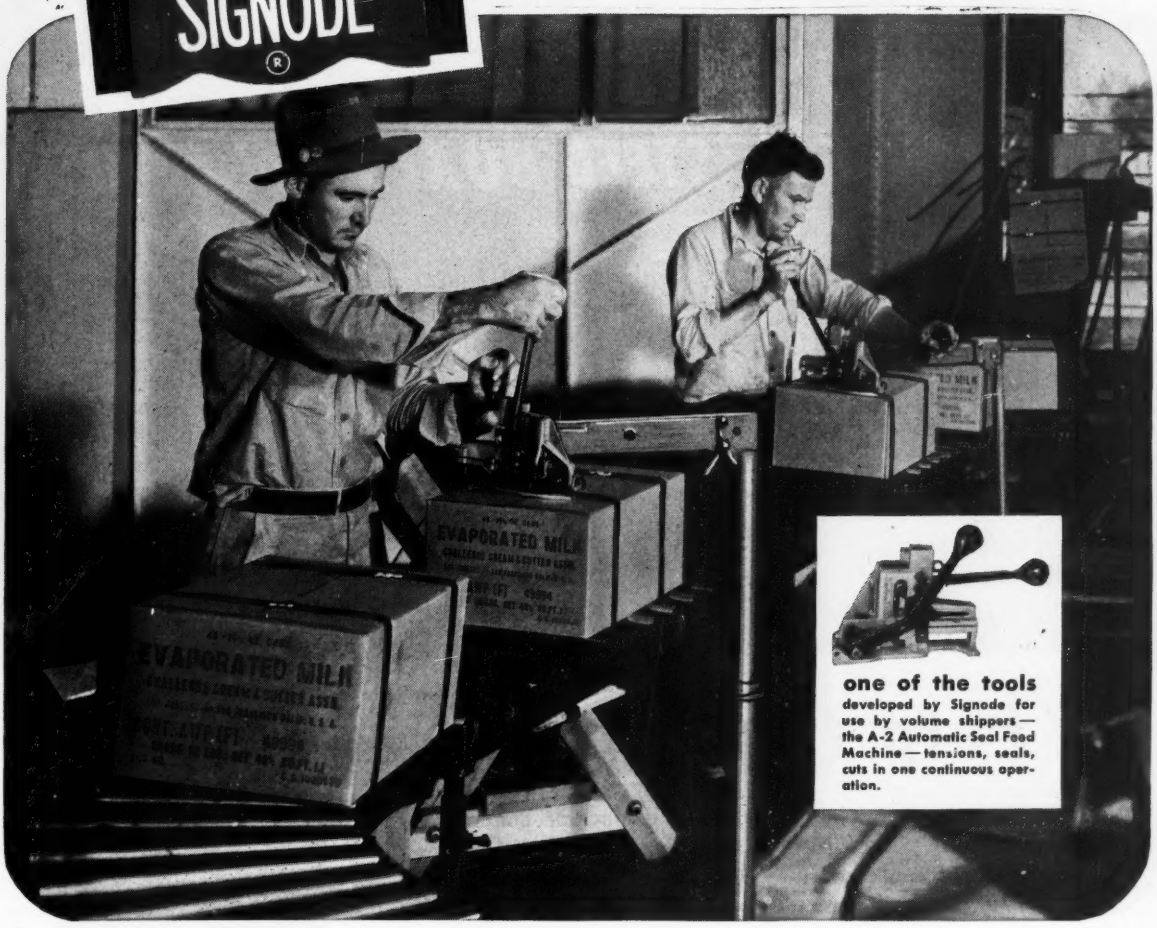





**one of the tools**
developed by Signode for use by volume shippers — the A-2 Automatic Seal Feed Machine — tensions, seals, cuts in one continuous operation.

# How to Maintain Profits in a Buyers' Market!

If you are wedged between "fixed" production costs and sagging sales prices, take another look at your packaging and shipping methods. For here is a vast area of money-saving possibilities that many manufacturers have overlooked.

In the use of steel strapping alone, only a few of its proved benefits are being capitalized.

Sure, it's great for protecting products in transit! But, more than that, its efficient use—with new tools and methods developed by Signode's steel strapping engineers—will help you cut your cost of doing business *6 ways:*

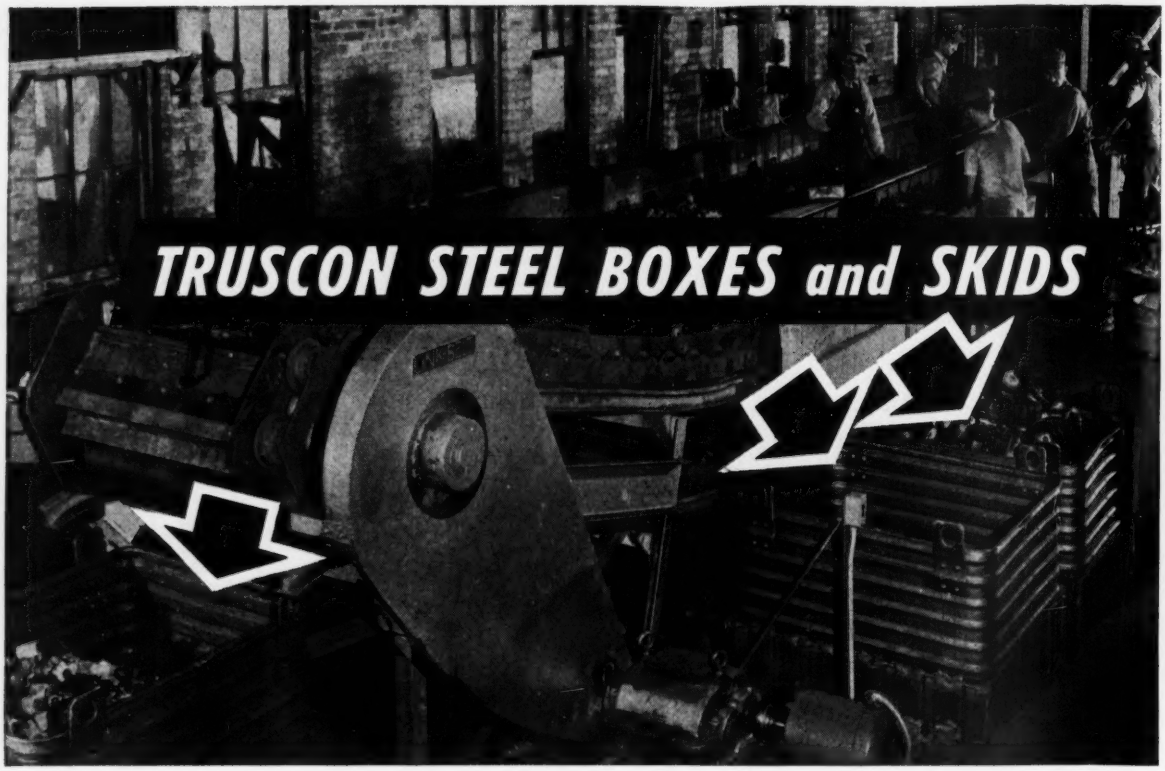
(1) reduce damage claims; (2) reduce package costs; (3) reduce freight bills; (4) discourage pilferage; (5) put shipping room operations on a production line basis; and (6) increase customer good will.

Special bulletins, describing Signode tools and steel strapping applications for practically all classes of products, are available without cost. To get this helpful information, write today listing the items you ship.

**SIGNODE STEEL STRAPPING COMPANY**

2618 N. WESTERN AVENUE CHICAGO 47, ILLINOIS

STEEL STRAPPING PROTECTS YOUR SHIPMENTS AGAINST DAMAGE

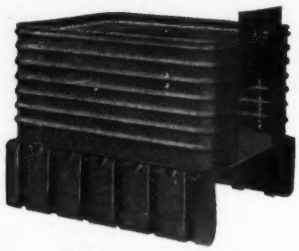



# help triple plant capacity!

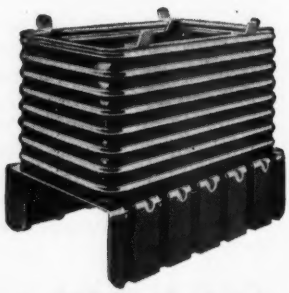
Mechanization of National Sewing Machine Foundry at Belvidere, Ill., tripled its capacity without increasing floor space, according to FOUNDRY Magazine, January, 1949. Major advantages have been lower casting costs, better competitive standing, more income for molders, better working conditions.

*Truscon Steel Boxes and Skids are playing an important part in this profitable plant development, as indicated by the action photo of an apron conveyor delivering castings from shake-out screen to the Truscon boxes.*

Truscon Steel Boxes and Skids are being designed into efficient materials handling and storage systems for all types of industries. Truscon Steel Boxes and Skids help get things done faster, with less waste motion and fewer man hours. Production is speeded . . . material storage and movement problems are simplified. There is an experienced Truscon materials handling man who will help adapt Truscon Steel Boxes and Skids to your particular needs. Write for booklet No. P-70.



Type PB-650. Truscon Box and Platform with Sliding End Door.



Type PB-120T. Truscon Steel Box and Platform with Tiering Lugs.

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**PRESSED STEEL DIVISION**
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*SUBSIDIARY OF REPUBLIC STEEL CORPORATION*

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● **KOROSEAL** Perforated Retainer . . . two used . . . bottom grid frame completely insulated . . . envelopes entire plate and presses against Slyver and two glass mats.

● **MICROPOROUS RUBBER SEPARATOR** . . . impervious to heat, electrolyte and oxidation . . close spaced for uniform pressure against Slyver-clad plates . . . high porosity and low electrical resistance.

● **SLYVER** . . . thick layers of infinitely fine glass fibres . . . laid parallel in vertical position . . America's BEST retention.

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**PALLET-FORK-TRUCK METHOD, PORTABLE ROLLER, CHAIN AND STEEL BELT CONVEYORS, CASTERED TRUCKS**

# Conveyor Assembly Planned For

1. Easy Handling of Units
2. Safety of Operation
3. Optimum Work Levels
4. Quick Re-arrangement of Work Stations

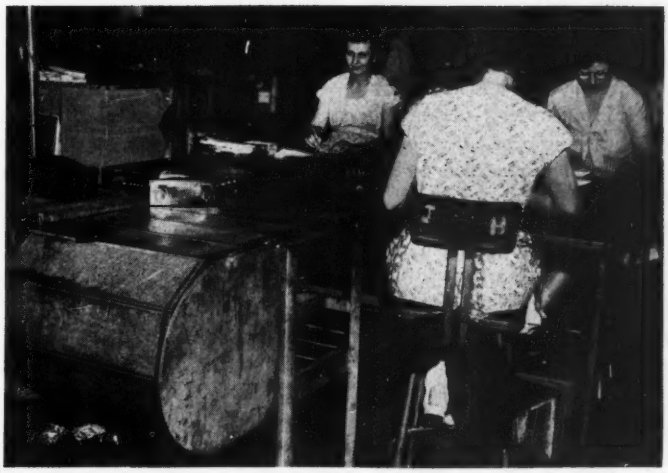
**By K. MERCIK, JR.**
Asst. Plant Engineer
BullDog Electric Products Co., Detroit

OUR company is known as a major manufacturer of electrical distribution systems for industry and homes. One of the production line items made is switch boxes (in numerous sizes), whose assembly is the subject of this description. Because engineers visiting our plant find of special interest our pallet handling of sheet steel from the shears to the press room, this phase of the over-all operation is covered here as well.

### Sheared Stock On Pallets

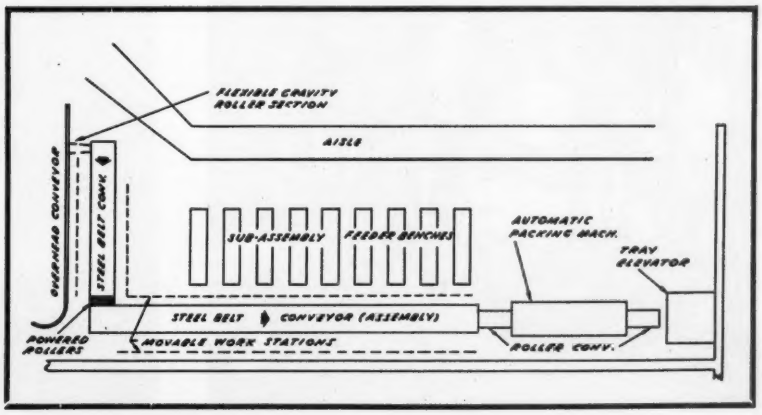
Because of the 20-some sizes of switch boxes made, it is essential that sheared stock for each size be on hand when a run is started in the press department. When production control schedules a program the stock is sheared, palletized, and stored in racks at one end of the press department.

As the pieces come off the shears, an operator at each of the two machines stacks the steel in a predetermined pattern (it varies according to size) on a 36" x 48" doubleface hardwood pallet, which is standard in our plant. A gauge is set up on one side of the pallet showing the height to which the stock shall be stacked—a safety feature adopted in view of the con-



ABOVE—POWERED ROLLERS (arrow) at the junction point of two sections of the assembly conveyor.

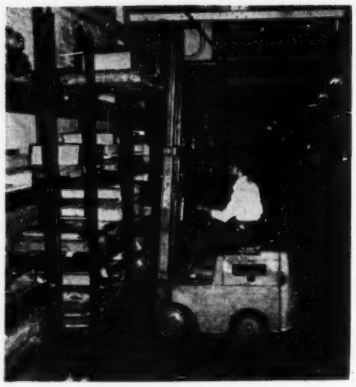
FLOW DIAGRAM of L-shaped assembly line includes packing equipment, which is described in Packaging Mechanics Section.



centrated weight of the loads. All raw material coming from the shears—copper, steel, fiber, etc.—is handled in this manner. The maximum weight of these loads is held to about 2000 lb. While this method requires an operator at each shear for stacking the material on pallets, we have found that it is justified by the resultant economy in manufacturing space and effort.

At the shears, the pallets are spotted on standard skids, which are moved out of the loading area by hydraulic hand lift truck. This avoids waiting for service from a busy fork truck. The latter transports the slit or sheared stock from an accumulation area to the storage racks adjacent to the presses. The racks of square tubing with inter-locking posts for safe tiering, are four high, or 108" to the top of the highest pallet. The racks are set up in two banks paralleling an aisle. Stacking in this relatively limited area multiplies the available square footage and maintains the stock in an orderly manner for quick accessibility of any desired size. An uninterrupted flow to production is thus assured.

The pallet loads of sheared stock for the boxes are moved to the first presses in the adjoining production aisle, which is paralleled by another in which the covers are fabricated. The pallets are returned to the loading area when



**PALLET LOAD** of sheared sheet metal being stored in tiering racks near press department.

empty. The work is handed from press to press, moving progressively in a south-to-north direction, and at the far north end the completed closures are deposited in large-capacity, caster-mounted box trucks.

### Conveyor Layout For Short Moves

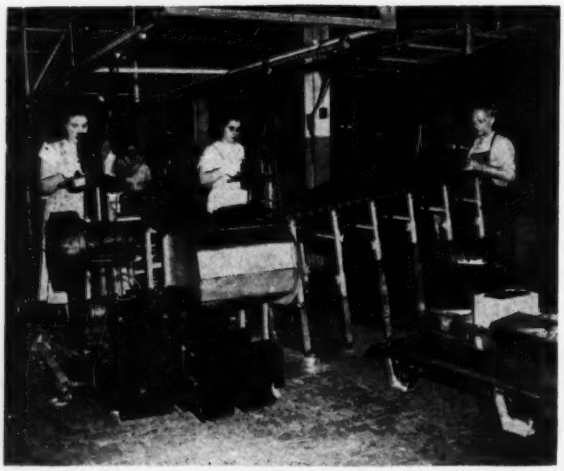
These loads are wheeled across an aisle to the hang-on point of a chain conveyor. The latter carries the boxes and covers (both arrive here) successively through an industrial washing machine, a drier oven, a flow-coat booth, and a baking oven. This conveyor travels 15 FPM and has 42" long T-iron carriers with a series of holes. The carriers are spaced 24 ins. apart. The fabricated units are hung up with simple hooks, whose length varies in accordance with the size of the item being conveyed. The conveyor is a closed circuit 700 ft. long, and the fabricated parts are not touched until after they have emerged from the last of the processing operations.

The boxes are delivered by the conveyor at the opposite end of the plant (adjacent to the assembly department), where removal from the line is done in one of two ways. 1. Since the return line passes by the start of assembly, the boxes can be taken off and fed directly to the assemblers. 2. Beyond this point, the conveyor makes a 90-degree turn to enter a "clearing house" area, located about 30 ft. from the start of assembly. As the components are removed they are sorted into castered box trucks, which are then wheeled to the point of use. Note that the processing conveyor at either end is laid out in relation to the production departments so that (a) short moves with castered equipment and (b) direct feeding to assembly are possible. The method chosen depends largely on the production schedule and the size of closure being run.

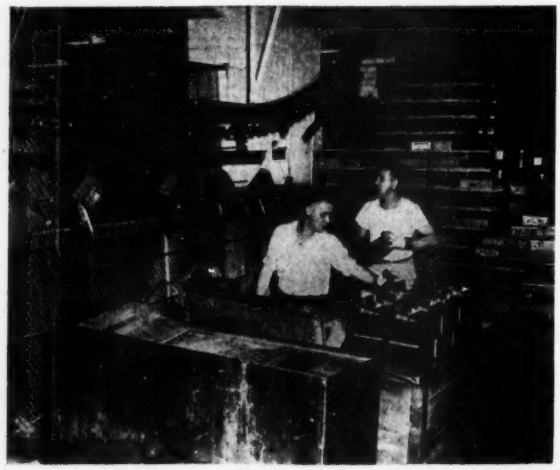
From the castered trucks, the feeder operator shunts the switch boxes over a flexible gravity roller conveyor which has scissor-type side rails. Because of this construction the unit can be contracted to

*(Turn to page 41)*

**ACCORDION-TYPE CONVEYOR** delivers boxes to start of assembly. Conveyor is extended or curved when necessary.



**FROM BOX TRUCKS** fabricated boxes and tops are hung on processing conveyor.



# Specifications on Electric Overhead Cranes (and general information) for Standard Service

## PART I

**THESE specifications (including general information) are released by the Electric Overhead Crane Institute, and were developed with a threefold purpose in mind: 1. To promote standardization by providing a basis for uniform quality and performance. 2. As an aid to purchasers of cranes, engineers and architects. 3. As a general guide for the manufacturer who, applying his engineering ingenuity, may want a basis for economical procedure. NOTE: The specifications and data given apply to standard industrial service cranes for medium duty requirements. Examples are heavy machine shops and "medium" foundries, and fabricating and assembly plants. Excluded are such light-duty cranes which are used for infrequent service in power houses, as well as heavy-duty cranes employed for continuous service in steel mills and similar operations. The general nature of these data is helpful as a basis for arriving at conclusions, which may be checked with the individual manufacturer.**

## General Specifications

### Building Design

The building in which an overhead crane is to be installed should be designed with consideration given to the following points:

(a) The distance from the floor line to the truss should be such as to allow for the required hook lift plus the distance from the center of the hook in its highest position to the high point on the crane plus clearance to the lowest point on the truss.

(b) The distance from the floor to the lowest point on the truss should be such that the lowest point on the crane will clear all machinery or other obstructions or when necessary provide railroad clearance under the crane.

(c) After determination of the building height, based on the factors above, the crane runway should be located with the top of the runway rail at a distance below the lowest point on the truss equal to the height of the crane plus clearance.

(d) Where lights, pipes, or any other objects project below the lowest point on the building truss, they must be considered as the low point of the truss.

(e) Knee braces in building should be designed so as not to interfere with the crane.

### Clearance

In the case of narrow width buildings where truss sag may be ignored a minimum clearance of 3" between the highest point of the crane and the lowest point on the truss should be provided. For wider buildings where truss sag becomes a factor this clearance should be increased to 6 inches.

The clearance between the end of the crane and the building column or any other obstruction should be not less than 2 inches. For wide buildings or where heavy capacity cranes are used not less than 3 inches clearance should be provided. Pipes, conduits, etc., must not reduce this clearance.

### Runway

No part of the crane runway, runway rails, or rail stops, shall be furnished by the crane manufacturer. The rail stops furnished by the purchaser shall be designed to suit the specific crane to be installed.

The crane runway shall be provided by the purchaser so that the runway rails are straight, parallel, level, and the exact distance center to center as specified by the purchaser to the crane manufacturer. The runway rails should be standard American rail sections of a proper size for the crane to be installed.

The crane runway should be designed with sufficient strength and rigidity to prevent undue lateral or vertical deflection.

MEMBER COMPANIES OF THE ELECTRIC OVERHEAD CRANE INSTITUTE

Alliance Machine Co., Alliance, Ohio; Bedford Foundry & Machine Co., Bedford, Ind.; Cleveland Crane & Engineering Co., Wickliffe, Ohio; Harnischfeger Corp., Milwaukee, Wis.; Morgan Engineering Co., Alliance, Ohio; Northern Engineering Works, Detroit, Mich.; Manning, Maxwell & Moore, Inc., Shaw Box Crane and Hoist Div., Muskegon, Mich.; Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.; Whiting Corp., Harvey, Ill.

### Runway Conductors

The runway conductors shall be wires, angles, rails, or other types to suit the particular installation. They should be properly supported and insulated in accordance with the requirements of Article 610 of the latest issue of the National Electrical Code and have sufficient capacity to provide proper current to the crane, or cranes, operating with full rated load. The runway conductors shall not be furnished by the crane manufacturer unless specifically stated.

### Materials

All materials used in the crane shall be of first class quality. All structural steel used shall conform to ASTM-A-7 specifications or shall be an accepted type for the purpose for which the steel is to be used or for the operations to be performed on it.

### Factor of Safety

The mechanical parts of the crane will be designed to have a minimum factor of safety of five (5) when under rated capacity load and based on the ultimate strength of the material used. Girders will be designed in accordance with the data given in the Girder Specifications.

### Rated Capacity

The rated capacity of the crane shall be that shown on the capacity plates attached to the crane. The rated capacity shall be stated in tons of 2000 pounds. The capacity of the crane to be installed should be selected on the basis of the maximum load to be handled. Overloading decreases the factor of safety and decreases the life of the wearing parts of the crane.

### Accessibility

The crane shall be designed throughout with special attention to accessibility, permitting inspection and renewal

of parts with a minimum of delay. Bridge and trolley truck wheels shall be readily removable. Wherever possible each gear, pinion, shaft, or bearing, shall be readily removable without disturbing other parts. Lubrication fittings shall be readily accessible.

### Painting

Before shipment the crane shall be thoroughly cleaned and painted with the crane manufacturer's standard paint.

### Shipping

The crane shall be assembled in the manufacturer's plant and taken apart only to the extent necessary for shipment. All exposed finished parts shall be properly coated with compound before shipment. All parts shall be carefully match marked when taken apart for shipment.

### Lubrication

The crane shall be provided with all necessary lubrication fittings. Before putting the crane in operation the purchaser shall lubricate all bearings, gears, etc.

### Drawings

Two copies of the manufacturer's clearance diagrams shall be submitted for approval. One copy shall be approved by the purchaser and returned to the crane manufacturer. Operating instructions and spare parts information shall be furnished. Detail drawings shall not be submitted.

### Warranty Clause

The crane manufacturer shall guarantee the crane covered by his proposal to be in accordance with his company's specifications and to be constructed of proper materials and workmanship. The manufacturer shall agree to repair or furnish without charge (f.o.b. point of shipment) but not to install, any part or parts of said equipment and/or materials which may prove within one year after shipment to have been defective in workmanship or materials. Where machinery is used continuously (that is, more than twelve hours a day) the time of guarantee is to be reduced by one-half. The purchaser shall give immediate notice of alleged defects and return the defective parts prepaid for inspection if requested by the crane manufacturer. The crane manufacturer is to assume no responsibility for work done or expenses or replacements except when authorized by his home office in writing. The crane manufacturer shall in no event be liable for operation delays or consequential damages of any character caused by such defects. All equipment, material or machinery purchased outside by the company in accordance with purchaser's instructions and furnished with the company's equipment, shall be guaranteed by the company only to the extent of the original manufacturer's guarantee.

## Trolley Specifications

### General

The crane trolley carries the hoisting mechanism and travels on the crane bridge. It may be furnished with a single hoist unit or in the case of large capacity cranes, when so specified, with an auxiliary hoist of lighter capacity.

### Trolley Frame

The trolley frame shall be welded rolled steel or cast construction or a combination of both. It shall be of rigid construction designed to transmit the load to the bridge rails without undue deflection.

### Drum & Sheaves

The drum shall be made of high grade cast iron or equal material. It shall be designed to withstand the maximum bending and crushing loads. The drum should be so designed that not less than two complete wraps of hoisting rope will remain in the grooves when the hook is at the lowest position for the lift specified, and not require overlapping of the rope when the hook is in its highest position. Drum grooves shall be turned from the solid metal. The drum shall be grooved right and left hand. The pitch diameter of the drum and running sheaves should be not less than 24 times the rope diameter when 6x37 rope is furnished or 30 times the rope diameter when 6x19 rope is furnished. The pitch diameter of idler sheaves should not be less than one half the diameter of running sheaves. When special clearances and lifts are required, it may be necessary to exceed these limitations.

### Hoisting Ropes

The hoisting ropes shall be of proper design and construction for crane service. Standard hoisting ropes shall have a hemp center. Ropes with a wire center may be provided for hot metal cranes when so specified.

### Load Block

The load block frame shall be of steel construction. The hook shall be forged steel, supported on a ball or roller thrust bearing. The hook shall rotate freely on this bearing.

### Gearing & Shafts

All gears shall be steel. The type of gears to be furnished shall be specified by the crane manufacturer.

Pinions shall be rolled or forged steel. They shall have teeth machined from solid blanks and should be pressed on and keyed to the shaft. All gears and pinions should be enclosed and all high speed gearing should operate in an oil bath or in soft grease.

Shafts shall be machined true to size at bearing and gearing fits. All shafts shall be rolled or forged steel.

### Bearings

Bearings may be roller, ball, or bronze bushings. The type of bearings to be furnished shall be specified by the crane manufacturer. Bearing housings shall be split or so designed as to permit easy removal of the shaft. All bearings shall be provided with oil bath or pressure lubrication. Bearings shall be designed as far as practicable to exclude dirt and to prevent leakage of oil or grease.

### Brakes

Each hoisting unit shall be provided with two (2) means of braking. One brake shall be directly applied to the hoist motor shaft or another shaft in the hoist gear reduction and shall automatically set when current is cut off from the hoist motor. The other braking method may be either mechanical or electrical.

The mechanical load brake, if furnished, shall automatically control the speed during lowering so as to prevent undue acceleration.

Electrical dynamic braking control for direct current and electrical braking control for alternating current shall control the speed during lowering so as to prevent undue acceleration.

### Wheels

The trolley wheels shall be double flanged with treads accurately machined or ground to size. Wheels shall be chilled car wheel iron, cast, forged, or rolled steel. Wheels shall be pressed on and the driver wheels shall be keyed to the axles.

### Upper Limit Switch

Each hoist motor shall be equipped with an upper limit switch to prevent over-travel of the block in the hoisting direction. It shall be arranged to shut off the current from the hoist motor at the highest safe position of the block and shall be so arranged that the block may be lowered by operating the hoist controller in the lowering direction. The type of limit switch to be furnished shall be specified by the crane builder. (See Electrical Specifications.)

## Bridge Specifications

### General

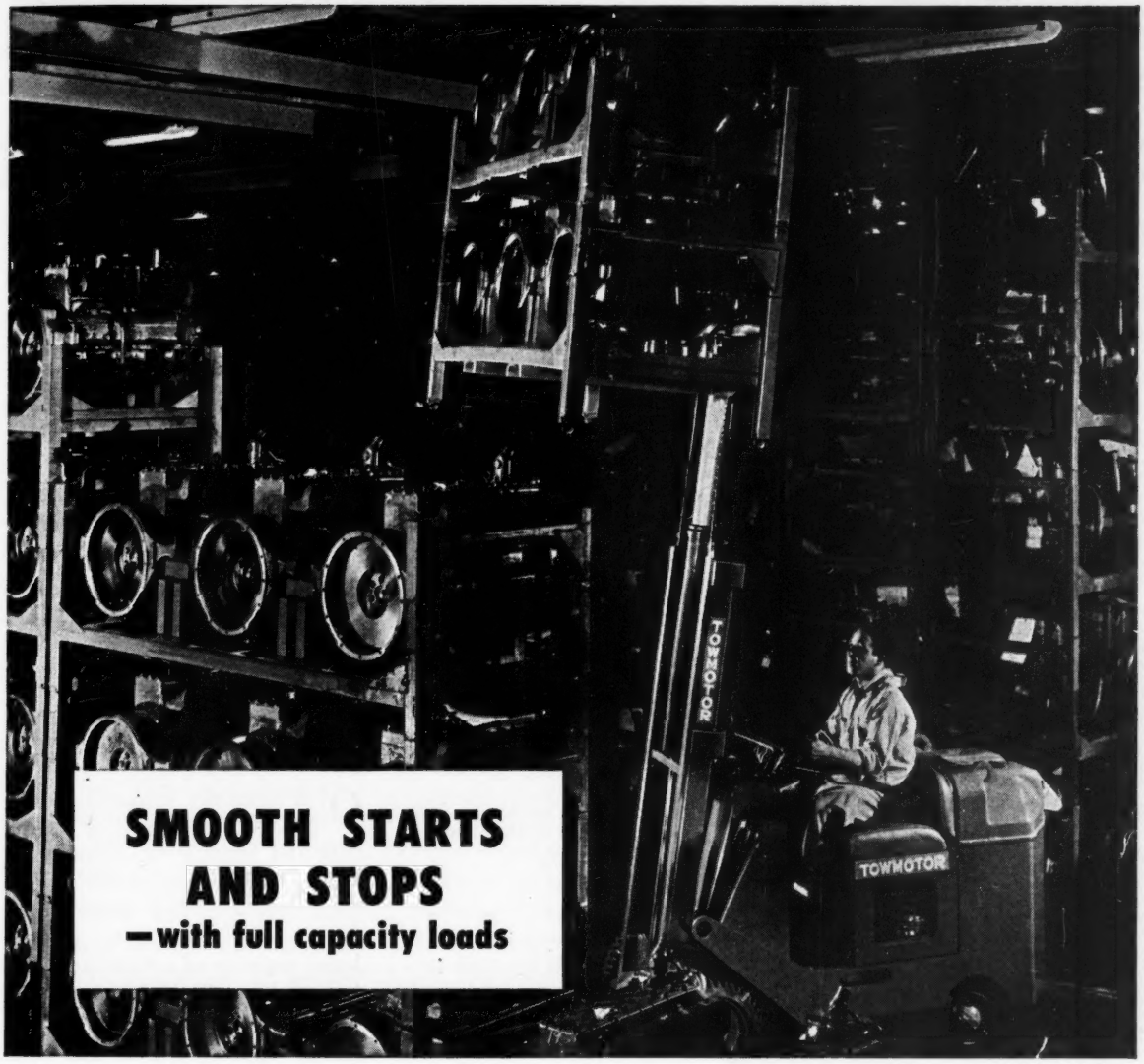
The crane bridge shall consist of two girders rigidly attached to the end trucks and resting on them. Where possible, the girders should rest on top of the trucks and should be notched. Connections shall be made with large fitted bolts. Ample gusset plates shall be provided to keep the crane in alignment. Where headroom conditions require, a butted end construction may be used, in which case a connection shall be provided to care for the maximum shear.

Rails shall be provided on the bridge of a suitable size to carry the crane trolley and the rated load. The girders shall be box type or "I" beam type as specified by the crane builder. The bridge motor and gear case shall be located at approximately the center of the span. The crane shall be driven at each end from a cross shaft running the full length of the span. The cross shaft shall be of ample size and supported at frequent intervals to prevent undue defection or whipping.

### Bridge End Trucks

The crane bridge shall be carried on end trucks and double flanged wheels of ample size to carry the rated load when lifted at one end of the crane bridge. The wheel base of the end trucks shall be properly proportioned to the span.

*(Turn to page 40)*

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**—with full capacity loads**

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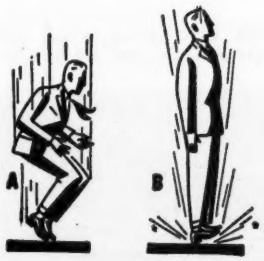


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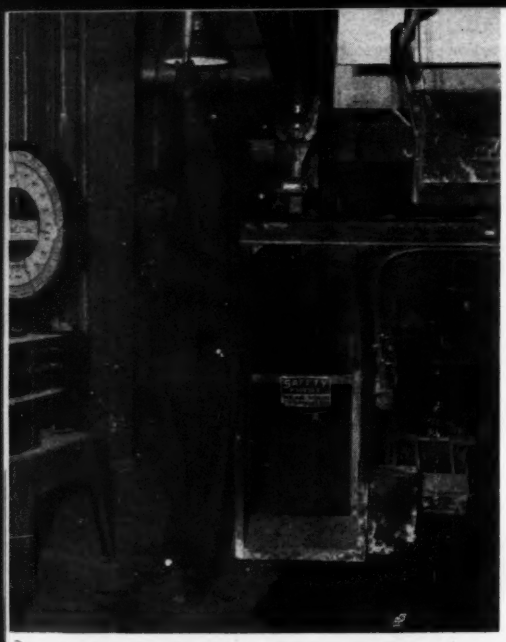
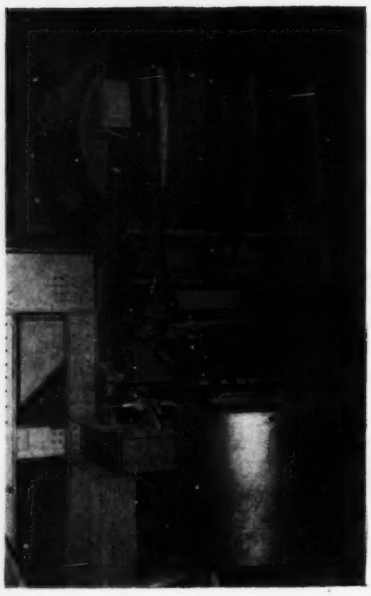
# MONORAIL MOVES MI
# WITH TWO OP

**STORAGE BINS, WEIGHING HOPPERS, MONORAIL COLLECTOR CAR, SKIP HOIST, MONORAIL TRACTOR, BATCH CANS**



WEIGHING INGREDIENTS. Operator regulates flow of batch to weighing hopper. As next step . . . .

COLLECTOR CAR travels up to mixer on immediate level. In third photo . . . .



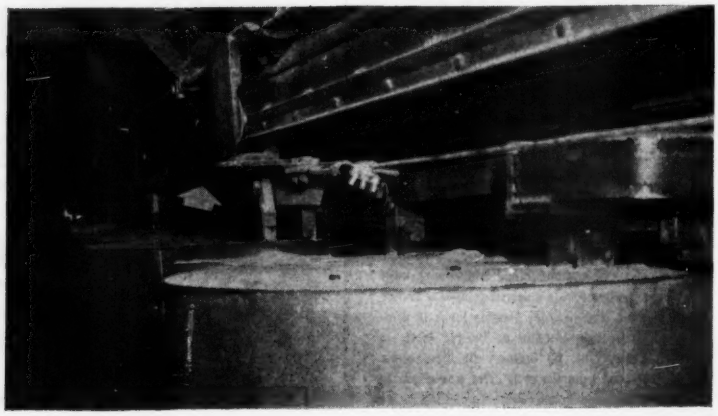
TILTED MIXER (top) is discharging to batch can (bottom). On top level, you can see how . . . .

***A monorail batching system feeds millions of pounds weekly to these continuous furnaces—with two men per shift.***

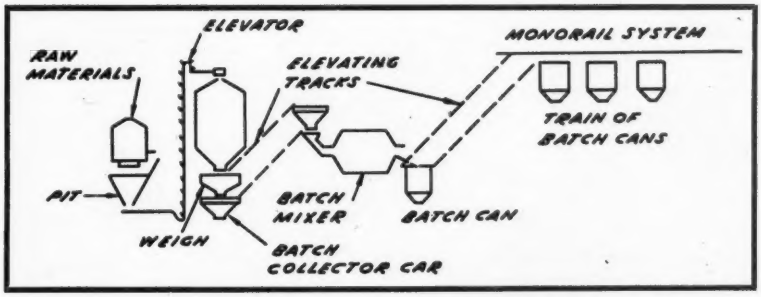
**By O. M. COFFMAN**
Manager, Industrial Engineering Department
Owens-Corning Fiberglas Corp.
Kansas City, Mo.

OUR company manufactures glass in fiber form for industrial and building insulation purposes. The furnaces of this sizable plant, which started operation in November of 1946, have a combined capacity of several hundred tons of Fiberglas material per 24-hour day (on the basis of seven days a week, 365 days a year). Raw batching adds approximately another 20 per cent of this weight,

PUSHER RAIL section (arrow) with dogs engages plates on cans, and then the . . . .



# ...S MILLIONS OF POUNDS . . .
# ...O OPERATORS PER SHIFT




**SCHEMATIC FLOW SKETCH** shows position of mixer at intermediate level between floors, with connecting elevating tracks.

the difference being accounted for by waste and chemical loss.

The monorail system used for batch handling is the subject of this description. It is of particular interest primarily because (1) the transfer of the loads between two floor levels is accomplished effortlessly with push-button and limit-switch control and (2) the heavy tonnage indicated requires only one operator per shift on each of the two floors. (An intermediate level is the station for the rotary mixer.)

### Bucket Elevator, Distribution Belt

The bulk raw materials — for example, sand, limestone, feldspar and dolomite—arrive by freight car and hopper-bottom car and are discharged to a pit below track level. These ingredients are carried by bucket elevator to a reversible distribution belt running in a housing above the storage bins, which are of 6900 cu. ft. capacity. This track-mounted belt conveyor is set to discharge the various types of materials into one of eight tanks arranged in line.

The discharge spouts of the storage tanks are located in the batch house—the lower of the two operating levels mentioned earlier. This floor is about 34 ft. below that of the batch gallery, whence the ingredients are fed by gravity to the furnaces. The raw material from each of the storage bins must be withdrawn in the correct proportions for batching requirements, and then delivered to the rotary mixer at the far end of the room.

The industrial engineering department has developed specific procedures for each type of task, so that it can be done without waste of time and effort, and with maximum ease by the operators. The weighing and batch collecting are good examples.

**MONRAIL TRACTOR** transports train of cans to charging area. Return rail for empties, is shown at the left.

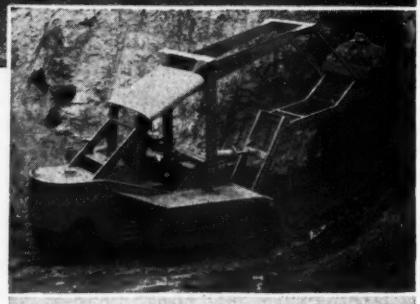
### Monorail Collector Car, Hoist

The lower part of each storage bin is a weighing hopper, with a scale dial arranged for maximum visibility at one side. As the operator manipulates the charge lever of the weighing hopper he faces the scale dial, as shown in the exhibits.

The operator starts at the far end of the batch house—about 135 ft. long—and as he weighs each batch he advances to the front of the room. This is the location of the monorail collector car. The latter runs on a dual track that straddles the bin discharge spouts. It has a platform for the operator to ride on, and its hopper is of 3600 lb. capacity. For collecting purposes, the car is run to the rear of the batch house, and the material is then withdrawn in the same order

# it DIGS...it LOADS at tremendous savings

the DEMPSTER DIGGSTER
TRADE MARK REG



Whether you need it for excavation work or loading from stockpiles or both, you need the new low production cost of the Dempster-Diggster. Here is the only small shovel that works on a hydraulic, simultaneous or independent crowd and hoist action and completely eliminates tractive effort in loading with wheels. Its variable crowd action at any dipper position means the Dempster-Diggster can dig lower . . . 15 inches below grade. Exclusive hoisting action means it can dig higher . . . digs out a 15 ft. bank. It's the only small shovel featuring such speed and mobility . . . travels at truck speeds on the road . . . gets in tight places on big jobs, freeing large shovels for heavier work. Ideal for the small and medium size excavation jobs yet powerful and fast enough for big jobs.

Stockpiling or loading work is easy for the DEMPSTER-DIGGSTER. Its speed . . . its 15 ft. turning radius . . . its extraordinary dumping reach help the Dempster-Diggster complete the average loading job in an amazingly short time. Dempster-Diggster buckets are easily interchangeable and are availab'e in three sizes. 1 cu. yd. (heaped) with hardened steel teeth for digging . . . 1½ and 2 cu. yd. for loading and stockpiling work. Power is supplied by a heavy duty gasoline or diesel engine. Hoisting, crowding, steering and braking are all 100% hydraulic. For complete information, write today for Folder Number 8154.

DEMPSTER BROTHERS INC.

Large photo above shows Dempster-Diggster loading crushed stone. Note how independent crowd and hoist action permits bucket to follow the slope of the material. At right, top: Digging out high bank. Right, center: Closeup of 1 cu. yd. (heaped) digging bucket. Right, bottom: Dumping crushed stone into truck.

889 N. KNOX, KNOXVILLE 17, TENNESSEE

in which it was weighed out. When the car has completed the collection cycle, it has returned to the front of the bay. Here is located the skip hoist that carries the batch to the rotary mixer which is installed about halfway up the 34-ft. height between the two floor levels. (A second skip hoist elevates the cans from the discharge side of the mixer to the batching gallery, as shown in the accompanying flow sheet.)

### A Push-Button Operation

The end point of the collector car track is a lifting section. The electric switch system that controls the vertical movement of the loads from this point includes both manually operated and automatic limit switches, as follows.

A switch panel at the side of the hoist structure contains a push button to (1) start the rotary mixer on the intermediate level and (2) actuate the hoist and send the load up. The two buttons are pushed in this order. The remainder of the cycle is controlled by limit switches. A third button on the box in the batch house is for emergency purposes.

On one side of the skip hoist track is a series of slow-down and stop switches, which are actuated by a bar on the ascending collector car. When the traveling car has contacted the low-down switch it comes into position for discharging the load into the mixer. As the car comes into position, levers at the side of the mixer engage the trip of the collector car spout; and as the stop switch is contacted the ingredients are properly discharged. The collector car descends automatically after the completion of the timed dumping cycle, which is controlled by a limit switch.

Upon completion of the 80-second mixing cycle, the rotary mixer tilts automatically and dumps the batch into a waiting batch can, which has been lowered from the upper floor on the second skip hoist shown in the flow diagram.

The can hoist operation is likewise controlled by a series of limit switches. The can feeding cycle is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**ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.**

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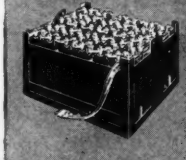
*Nickel • Iron • Alkaline*
STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto

as follows. In the batch gallery an empty batch can is placed by a pusher rail on the monorail lifting section, and the latter is then lowered to position on the mixer. A bar attached to the lifting section contacts a slow-down and stop switch as the can descends. As the container approaches the mixer, a bar at one side of the can engages an eccentric that tilts the chute from the mixer to a discharging position, whereupon the load is dumped.

Upon completion of the mixer-dumping cycle, the mixer tilts back into position. The chute is then raised from its discharging position, and the loaded can is elevated on the track. The dumping cycle of the mixer is a timed cycle controlled by a limit switch.

### Pusher Rail Positions Cans

On the upper level of the batch gallery the monorail lifting section (supporting the full can) is hoisted into place in the main track, where another slow-down and stop switch controls the vertical travel of the load. When the full can has come to a stop, a pusher rail (mounted on the monorail track) advances the can seven feet, and at the same time positions an empty can on the lifting section (to repeat the next step in the cycle).

The pusher rail consists of 1½" x 2½" angle iron mounted on two-wheel trolleys. It is motivated by a cable which is wound over a powered drum at about the center of the 25-ft. long rail section. On it, a series of pusher dogs is spaced according to the width of the cans. As an automatic switch actuates the pusher rail, the front end pushes the full can off the lifting section, while a dog further back positions the next empty can for descent to the mixer.

The pusher rail advances seven ft. in this cycle. Cross bars on the rail contact switches installed on the monorail, and these control the forward and return travel. As the pusher rail is stopped, the same switch starts the descent of the next empty can. A safety switch for reserve cans assures that the hoist

will not lower without an empty can. The length of the pusher rail is designed to accommodate five batch cans—four empty and one full. This reserve of empties is an additional safety precaution; it also times the operation for the man on this floor.

### Monorail Tractor Makes Safe Push-Button Operation

The empties are fed to the skip hoist from the east end of the 320 ft. long bay. A switch arrangement is provided which maintains the cans facing in the same direction. This is necessary to keep the two bars on each can properly located. One actuates the hoist safety switch; the second bar is located on the opposite side of the container. This is engaged by the dog extending down from the pusher rail.

The full cans continue by gravity for about 30 feet west of the hoist. At this point a pull switch connects to two parallel gravity tracks which serve for storage purposes. A monrail tractor operates on the trackage beyond the storage lines.

The tractor will haul as many as five full cans to the dumping locations, which are arranged to one side of the batch gallery over the furnace openings on the floor below. The individual cans are uncoupled from the train and spotted over reserve storage hoppers (leading down to the batch feeders on the lower level). The discharge spout of the can is opened and the free-running material allowed to flow by gravity to the feeders.

The two parallel storage lines extend for approximately one-fourth of the total 320-ft. length of the batch gallery. The slight slope in this part of the lines permits manipulation or manual shunting of individual cans when necessary, thus releasing the tractor for feeding tasks and return of trains of empties to the start of the cycle. Seventy cans of 3600 lb capacity are in use in the system.

The monorail trackage extends the full length of the bay. Spurs at several locations connect the two

*(Turn to page 29)*

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CONVEYOR ENGINEERS AND MANUFACTURERS

# How to Engineer Factory Elevator Requirements to Production . . .

**In an old building, to what extent can freight elevators be modernized? Should one be added to the vertical transportation system? Should all old ones be modernized—or perhaps only one? These and other questions are answered here on the basis of a case history—answers which may also shed light on your problem. Vertical transportation in an industrial building is today as accurately engineered and carefully fitted to the plant's production as any other phase of operation that improves efficiency, lowers costs.**

PRESENT-DAY elevator engineering takes into account future as well as present production programs, and existing elevator equipment is modernized to keep pace with the plant's needs. How engineers go about fitting elevator equipment to plant production is revealed in this typical analysis of the elevator requirements of a food processing factory in the Chicago area. It was recently faced with the problem of handling a 23% increase in production of one product and a 50% increase in another for 1949, as a result of installation of new processing machinery.

It was obvious that the company's two freight elevators, of the old-style hand-rope operated type, in use in the factory for the past 36 years, would not be able to handle the increased load. The question was how much renovation was required—whether to add a third elevator, modernize both the old elevators, or modernize only one of them.

### What the Study Revealed

The first step was to obtain accurate figures on utilization of present equipment. Examination of present production schedules and material handling methods showed that the two elevators made an average of 323 one-way trips per day consuming 178 minutes in travel time; that unavoidable delay used up 54 minutes; loading and unloading required 311 minutes, or a total of 543 minutes for the two elevators.

Two men were used on each elevator and the cars were being utilized 87.5% of the time, the remaining 12.5% of the time being unavoidable delay.

Analysis of the stepped-up production program indicated that the elevators would have to be utilized 109% of the time, which was obviously impossible.

The existing elevators traveled only 50 feet per minute and carried a 186 lb. minimum overload on 27% of their trips. Such overloading is not desirable, therefore the safety factor also had to be taken into consideration in planning modernization of equipment.

To determine exactly how much time was being consumed in present elevator operation, time studies were made. It was found, for example, that every time one of the elevators was loaded or unloaded, 18.87 seconds were required in opening the doors, dropping the threshold plate, picking up the threshold plate and closing the doors.

The average number of times each elevator was loaded and unloaded each day likewise was determined. If an item was received on the second floor, stored on the fifth and used on the fifth floor, the elevator would be loaded once, unloaded once. But if the item was received on the second floor, stored in the basement and used on the fifth, the elevator would be loaded twice and unloaded twice.

### Fork Trucks Not Used on Elevators

The possibility of handling freight with power industrial trucks was examined, but floor load capacities permitted fork trucks on second and basement floors only. Pallets were dropped on caslon skids and hand-trucked on and off the elevators. The elevators held three caslon skids or four 4-wheel trucks.

A study of receiving and shipping records of the factory revealed that freight handling varied from day to day but that on 203 out of 303 days the volume was 15% above average. Elevator requirements necessarily had to be planned to allow a margin of capacity and speed to take care of this excess.

Extending the utilization figures obtained for existing elevator equipment to the planned increase in production for 1949, it was determined that elevators would have to make 374 one-way trips instead of 323, using 204 instead of 178 minutes in travel time; that there would be 62 instead of 54 minutes in unavoidable delay and 361 minutes for loading and unloading the increased amount of materials instead of the present 311 minutes. Total time the two elevators would have to be in use with the increased production program would be 627 instead of 543 minutes.

### Fully Automatic Elevator Recommended

As a result of these freight handling requirements, plus the need to avoid overloading from the safety standpoint, it was determined that a fully-automatic electric elevator of 8,000 lbs. capacity and a speed of 150 ft. per minute (to replace one of the antiquated hand-rope elevators) would provide adequate capacity to accomodate the increased production.

With the present elevators traveling 50 ft. per minute, each elevator could make only 250 trips with two men during each day shift. With the higher speed electric automatic elevator the number of trips with it could be increased to 328. Using only one man, the hand-rope elevator could make a maximum of 159 trips; with the faster modern equipment, 187 trips.

From this it was determined that by keeping two men on each elevator and replacing one of the hand-rope elevators with automatic equipment, the combination will operate at 92% efficiency, more than adequate for 1949 production needs and leaving an 8% margin for the future. Two automatic elevators would be utilized productively only 87% of the time and it was decided that this excess capacity was not needed at present.

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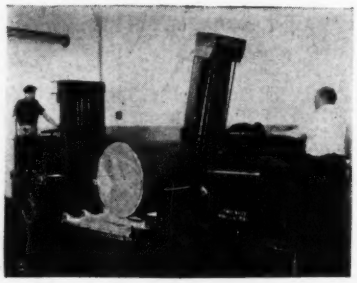
**PAPER ROLL SKIDS**—A highlift fork truck, used at the Condé Nast Press, Greenwich, Conn., removes a 2000-pound roll of paper stock from a special type, roll-carrying skid, for placement



near presses. The platform truck, shown at rear, moves two rolls of paper at a time from the receiving platform and deposits the skid-load in the storage area awaiting tiering of rolls by the fork truck.

# MEN IN THE NEWS

APPOINTMENT of J. D. Greensward as general manager of the Norwood (Ohio) works of Allis-Chalmers Mfg. Co. was announced by W. C. Johnson, executive vice-president in charge of the firm's general machinery division. Greensward, who has served as assistant to Johnson for the past three years, succeeds Frank H. Stohr, who died last March. Robert S. Fleshiem has been promoted from manager of the company's electrical department to Johnson's assistant. Roy M. Casper has been named manager of the electrical department.

STANLEY M. HUNTER, executive vice president of the American Hoist & Derrick Co., has announced the appointment of John E. Carroll as general sales manager. Carroll joined the company in 1937 as a district sales representative in the Texas area, then Chicago, and later in the west coast territory.

ROBERT A. MORRIS, assistant to the president, Acme Steel Co., has resigned his position to devote his full time to his duties as president of Ferguson-Lander Box Co., manufacturer of folding boxes for the food industry.

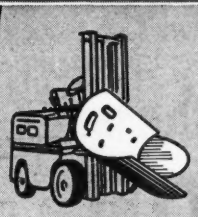
THE election of three new officers of the Westinghouse Electric Corp. was announced by the board of directors. James H. Jewell, manager of apparatus sales, and John M. McKibbin, assistant to vice president and manager of advertising and sales promotion, both of Pittsburgh, were elected vice presidents. Herbert P. MacDonald, treasury manager in the company's eastern district office in New York City, was elected assistant treasurer. He also has been appointed credit manager of Westinghouse and will make his headquarters in Pittsburgh.

EUGENE CALDWELL, vice-president and general manager of the Hyster Co., has announced two personnel changes. Thereon Howard, head of tractor sales and service in the eastern division of the company since 1941, will become manager of the Peoria, Illinois, plant. J. F. Lewis, formerly in charge of production and purchasing of the Peoria plant, is being transferred to Portland to assume the duties of chief production engineer. He will supervise parts and service, manufacturing

THE Baker Industrial Truck Division of The Baker-Raulang Co. has appointed George J. Albright Jr. as district sales representative, with head-

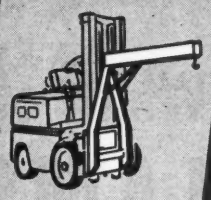
*(Turn to page 31)*


MATERIAL HANDLING *News*



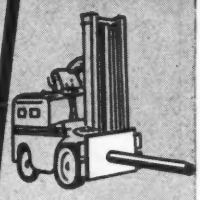
**Paper Scoop**

Picks up roll of paper from horizontal or vertical position and deposits it either way.



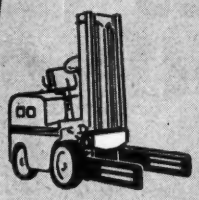
**CRANE**

for handling many large, unwieldy items unsuitable for forks or pallets.



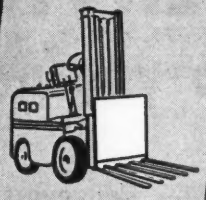
**RAM**

for handling coils or spools of material, castings and many fabricated units.



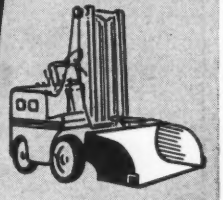
**Clamp Lift**

for handling boxes or other units that can be gripped securely between the clamping arms.



**Brick Fork**

for lifting and carrying bricks, concrete blocks and similar products assembled in special patterned units.



**SHOVEL**

for easy pick-up and dumping of sand, cinders, gravel, coal, aggregate and other bulk material.

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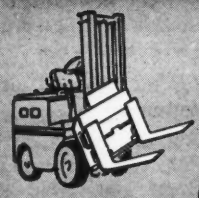
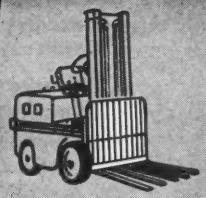
YOUR Clark dealer is a man worth knowing—competent to appraise your opportunities for savings, equipped to make unbiased recommendations on how to realize them. It's a sound idea to **CONSULT CLARK**



**Rotating Forks**

useful for handling and dumping containers of scrap and other materials.



**PUSHER**

a most useful device for pushing loads of certain types from the forks.

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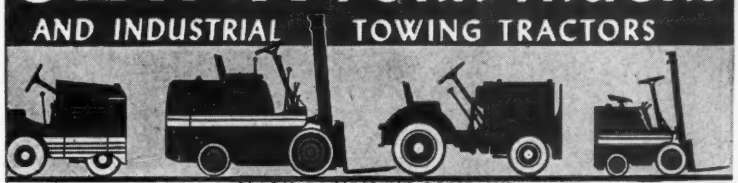

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## NEWS FROM THE SALES FIELD

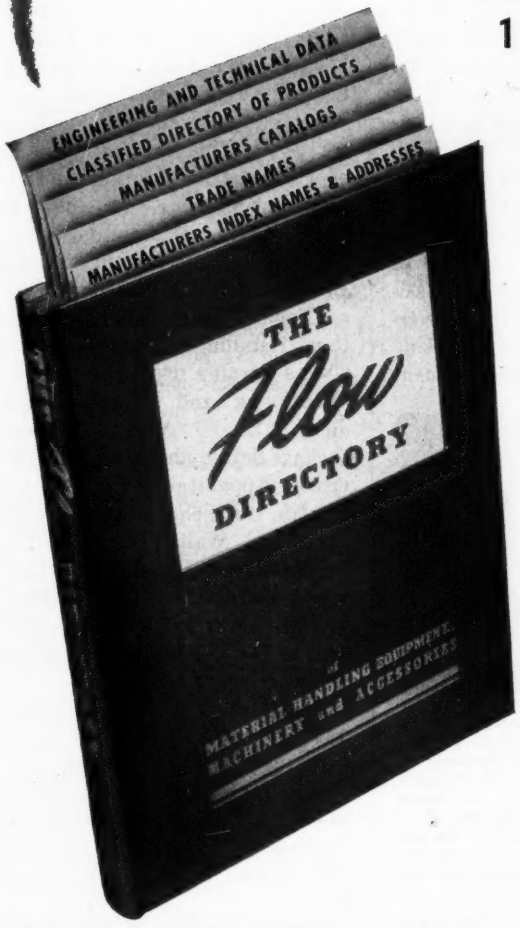
THE Automatic Transportation Co., manufacturers of electric industrial trucks, has appointed the following sales and service representatives. Conlan and Ayers Co., 1022 No. Fourth St., Milwaukee, headed by Hugh Ayers, president, and Harry M. Conlan, Jr., vice-president and treasurer; Riggs and Middleton Associates, 204 E. St. Clair St., Indianapolis, with James Riggs and Keith W. Middleton in charge; International Agencies and Machinery Co., Ltd., 2315 Gambie St., Vancouver, Canada.

THE Electric Products Co. has appointed the following representatives. Harry J. Fisher Associates, Cleveland and Cuyahoga Falls, who will handle most of Ohio and the panhandle of West Virginia; Arthur B. Sonneborn Co. as representative for the state of Michigan and the northwestern part of Ohio. The Sonneborn Co. has offices in Detroit, Grand Rapids, Flint and Toledo.

MERRILL BROS. has announced the appointment of four sales representatives. The George A. Allen Co., 9 So. Clinton St., Chicago, for Chicago and the states of Illinois, Missouri and Kansas; C. B. Lawrence Co., 740 Superior Ave., N.W., Cleveland, for Ohio, Michigan and Indiana; Henry R. Hansen, 330 Downing St., Denver, who will cover Colorado, Wyoming, Utah and New Mexico; Val W. Ove Metal Products Co., 1348 No. 37th St., Milwaukee, for Wisconsin, Michigan Peninsula, Minnesota, Iowa and Omaha, Nebraska. The Merrill Co. manufactures drop forgings and material lifting devices.

J. A. WEBB BELTING CO., 92 Pearl St., Buffalo: this company has been appointed sales representative in western New York and northwestern Pennsylvania for the Industrial Truck Division of The Baker-Raulang Co. The Webb Co. is headed by Howard P. Webb.

# EVERY WEEK IN THE YEAR IT WILL PAY YOU TO CONSULT THE 1949–1950 FLOW DIRECTORY




The new FLOW DIRECTORY contains 20% more pages than the first edition. It has more product information and illustrations, increased engineering data and wider usefulness.

An entirely new section has been added—*"Who Sells Material Handling Equipment."* This section lists manufacturers, agencies and distribution outlets. Local agents are geographically arranged to afford the reader quick identification of a product and where it is obtainable.

- The first FLOW DIRECTORY was a pioneering effort widely acclaimed by the industry. Never before had this vast amount of material been compiled between two covers. The new edition is even more complete and more informative.
- The next DIRECTORY is available now. You cannot afford to be without this important reference.
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"The FLOW DIRECTORY has proved a very useful addition to our library."
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*Manufacturers of Molded Mechanical Rubber Goods*

# Institute, Society and Association Chapter Activities

APPROXIMATELY 118 engineers and company representatives from six states registered for the Great Lakes Material Handling Conference held at the University of Toledo, June 13 through 15. The three-day affair was sponsored by the Toledo Chapter of The Material Handling Institute in cooperation with the College of Engineering and College of Business Administration of the University of Toledo and the Toledo Chapter, Society for Advancement of Management. It was co-sponsored by the national headquarters of the Material Handling Institute, Inc. A variety of talks was designed to interest the large audience who represented many segments of industry. Talks included "Management Looks at Material Handling" by J. H. Conklin, sales manager of the Clark Equipment Co., and president of the Material Handling Institute; "Production Problems of Material Handling," Robert Brady, Ingersoll Steel Division, Borg Warner Corp.; "Cost Reduction Through Better Handling Equipment and Methods," by Blaine C. Strimple, Owens-Illinois Glass Co.; "The Hidden Cost of Material Handling," by Dan R. Grandy, Textileather Corp., and secretary-treasurer, Toledo Chapter, S.A.M.; "Performance Testing of Packages in Relation to Handling and Shipping," Dr. Julian H. Toulouse, Owens-Illinois Glass Co.; "Sources of Information," Arthur E. Fryer, editor of Toledo Technical Topics; "Plant Layout and Material Handling," Pierce B. Brown, Owens-Corning Fiberglass Co.; "Packaging and Material Handling," E. H. Ashley, manager package development, Shipping Division, Apparatus Dept., General Electric Co., Schenectady; "Transportation," Walter Bockstahler, Bridgeways, Inc.; and "Space Utilization and Control," W. W. Phillips, Eli Lilly Co., and vice president of the Indiana Material Handling Society, Indianapolis.

**Milton A. Cox, at left, president of the Toledo Chapter of the Material Handling Institute, and chief traffic manager of Doehler-Jarvis Corp., and C. S. McIntyre, vice president and secretary of Monroe Auto Equipment Co. Cox was one of the representatives of the chapter on the program committee. McIntyre was moderator at a panel discussion on material handling**

The third day of the conference was devoted to field trips to the following plants in the Toledo area: The Electric Auto Lite Co., Doehler-Jarvis Corp., Rossford Army Ordnance Depot, Willys-Overland Motors, Inc., and the Toledo Scale Co.

Representing the Toledo Chapter on the conference committee were Milton A. Cox, president; Noel W. Franklin, vice president; Edward Southworth, secretary; and Irvin A. Degner, treasurer. It is understood that in view of the outstanding success of this conference, other such meetings are planned by the Toledo Chapter, as well as by other regional groups.

MEMBERS of the Indiana Material Handling Society, Indianapolis, elected the following officers at their June meeting. President, D. C. Rhodes, Pitman Moore

Co.; vice president in charge of programs, R. E. Pigg, Eli Lilly & Co.; vice president in charge of membership, L. O. Marschke, W. A. Marschke & Sons; secretary-treasurer, S. E. Jerrell, Diamond Chain Mfg. Co. W. W. Phillips, Eli Lilly & Co., was elected director to the American Material Handling Society.

THE June meeting of the Northeastern Ohio Chapter, Cleveland, of the Material Handling Institute was held at the plants of the Timken Roller Bearing Co., Canton, Ohio. The occasion was a preview of the open house which celebrated the company's 50th anniversary. In the afternoon, trips were made through the Timken plants in Canton and Gambrinus. A short informal meeting was held in the evening and a nominating committee to elect officers for the 1949-1950 season.

**MILLIONS OF POUNDS . . . BY MONORAIL**

*(Continued from page 23)*

main lines. One of these is for feeding full cans to the reserve hoppers, the other one for return of empties. The arrangement of spurs and switches also permits the pendant-controlled tractor to push the cans, whenever this means saving of travel.

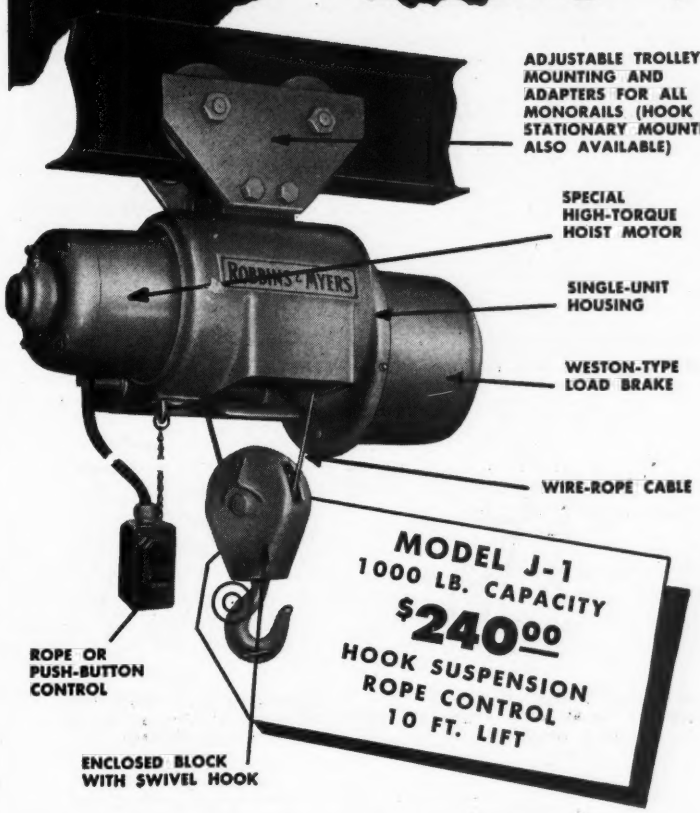
It has been shown that one operator (per shift) does all the tasks in the batch house on the lower level, while a second man performs all jobs in connection with feeding and return of empty cans to the start of the cycle. There is no work requiring physical exertion. On the lower level, movement is by collector car, while on the upper level hauling jobs are done by tractor. Vertical movement of the loads is controlled by a system of switches, making for a safe and foolproof operation.

Thus millions of pounds of raw materials are transferred weekly between the two levels with an absolute minimum of effort.


NEW! LOW-PRICED!

ROBBINS & MYERS

Wire Rope ELECTRIC HOIST




You asked for a low-priced Robbins & Myers electric hoist . . . here it is! Quality-engineered and manufactured by the experienced men who make much heavier R & M hoists, this new "J" hoist will end a lot more costly, back-breaking lifting, give skilled labor more time to use their skills.

Lug, hook or trolley mounting . . . adaptable to 7 different beam sizes . . . the reliable "J" hoist is versatile, easy to operate. Little headroom is required. High-torque motor tailored to your exact needs. Push-button control for accurate spotting. Single-unit housing assures positive alignment. This hoist is ruggedly built; requires little maintenance. Sizes 1/4, 1/2 and 1 ton.

(WRITE FOR BULLETIN FL 451 )

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# FLOW ENGINEERING DATA PAGE

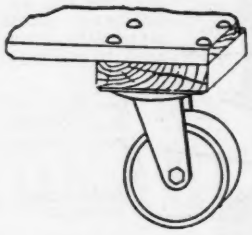
**A regular feature designed to help the engineer and others responsible for material handling. The FLOW Engineering Data Page will cover a different category of equipment each month.**

## CASTER MOUNTINGS

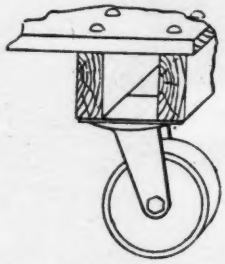
### (From the 1949 FLOW Directory of Material Handling Equipment, Machinery and Accessories)

For engineers and draftsmen who design portable equipment, efficient and economical methods of attaching casters to truck frames are necessary.

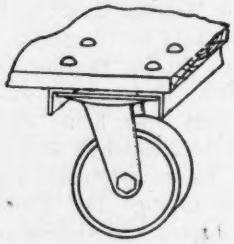
While the drawings indicate attachment by bolting, the use of the welding process is increasing to firmly secure the caster to the frame. Steel-forged caster top plates can be welded easily. The process saves time and labor in layout work and fabrication. Drilling or punching of holes is eliminated and alignment of the top plates is simplified.



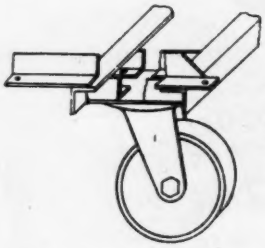
Regularly used on wood dolly and box frame trucks.



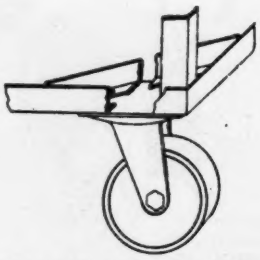
Used on wood platform trucks to attain height.



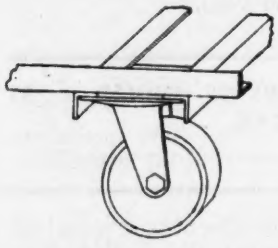
Bolts extend through decking and supporting cross angles. Adds rigidity to platform dollies.



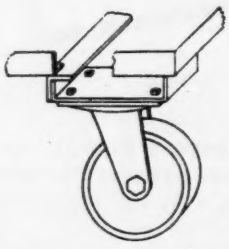
An effective method of attaining additional height when attaching casters to steel frames.



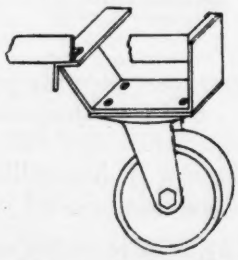
Corner angle gusset stiffens frame, and effectively anchors all four corners of top plate.



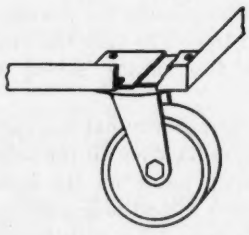
For attaching casters at ends or in center of truck. Cross angles add rigidity to frame.



Formed plate caster bolster. Saves time on quantity jobs as casters can be attached to plate before it is welded to frame.

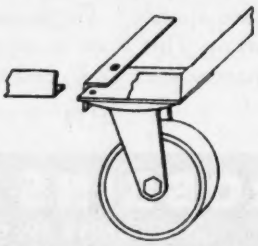


Extended formed caster bolster. Either plate or two pieces of bar stock can be used. Effective for gaining height.

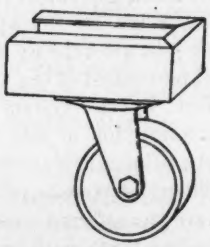


Corner plate stiffens frame and casters can be mounted to plate without drilling through frame.

Heavy duty mounting using cross channels.



Alternate construction. For attaching casters at ends of frame.



Fabricated U-shaped channel. For heavy duty applications.

## MEN IN THE NEWS . . .

*(Continued from page 25)*

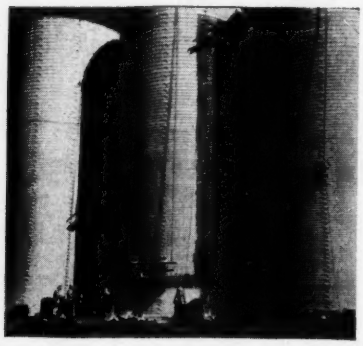
quarters in Memphis, Tenn. Albright formerly served as engineer for the American Monorail Co.

MAGNESIUM CO. OF AMERICA has opened an office in San Francisco and has relocated its Los Angeles office. The new office at 1529 Russ Bldg., San Francisco, is under the management of Dennis E. Harvey. Julius Slovenko remains in charge of the Los Angeles outlet in its new quarters at 8922 West 25th St.

THE Addison-Semmes Corp. has appointed Edward Butts, Jr., as its west coast representative. The new company office will be located at 1 Drum St., San Francisco. The recently opened east coast office at 520 Lexington Ave., New York, is under the direction of Harris Smith. These offices are in addition to the Chicago office located at 247 E. Illinois St., and the home office at 1800 Thurston Ave., Racine.

HARRY W. BEEDLE, manager Boston branch, The Electric Storage Battery Co., retired recently after more than 38 years of service in the employ of Exide. He is widely known in manufacturing, engineering and automotive circles in New England.

FOR PEANUTS — Three concrete stave storage towers have recently been erected at Dublin, Ga., for the Southern Cotton Oil Co. These towers will be used for storing peanuts and cottonseed for long periods of time without deterioration. Each tower is 30 ft. in diameter and 65 ft. high, having a capacity for 450 tons of peanuts and 560 tons of cottonseed. Be-



cause of the perishable nature of the products, the storage towers are dampproofed. The structures are equipped with conveyors for elevating the material. Discharge is by gravity.—**Courtesy, Neff & Fry Co.**

*Enterprise Wheel & Car Corporation, Bristol, Virginia

**. . . they're a "SNAP" with ROSS lift trucks**

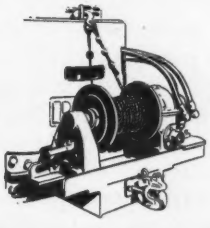
**Big, bulky loads can cause increased handling costs. But at Enterprise Wheel & Car Corporation such costs have been greatly reduced by a ROSS Lift Truck. It handles raw materials in 5-ton loads . . . sub-assemblies and completed assemblies . . . loads out shipments. In addition, it efficiently augments the yard crane . . . Says Mr. F. A. Jones: "We find the ROSS exceptionally valuable in that we can now store shorter-length materials in our general storage yard. This releases space under the crane for the extremely long structurals and bars which the crane handles."**

**Investigate ROSS Lift Trucks (capacities 5,000 to 18,000 lbs.) for *your* plant . . . find out how they can become vital links in your materials-handling system . . . it will pay you.**

**ROSS CARRIERS** . . . Speed transportation of long materials and unit-loads. Capacities, 10,000 to 30,000 lbs.

**POWER-WINCH ATTACHMENT**

Adds to versatility of ROSS Lift Trucks. Permits faster, easier spotting of railroad cars, moving of machinery, skidding of heavy loads. Fits all models.



Rely On ROSS

**THE ROSS CARRIER COMPANY**

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*Direct Factory Branches and Distributors Throughout the World*

# WE Sliced THE COST O

**SHOVEL CRANE, BELT CONVEYORS, BRIDGE AND MOUNTED CRANES, FORK, STRADDLE AND SCOOP TRUCKS**

*While this paper deals with the handling it applies to many plants where large quan heavy machinery and pipe are moved. It is dures reduced the accident rate markedly. $100 in the last FLOW Cos*

**DIESEL SHOVEL** loads crawler-mounted aluminum "cross" conveyor, which delivers to trunk line. Crushed 12" sulphur lumps are dumped in hopper, which is mounted on rails. Belt width is 36 inches.


**By A. A. GUSTAFSON**
Mining Engineer
Freeport Sulphur Co.
Port Sulphur, Louisiana


WITH the closest railroad located 10 miles from the Freeport Sulphur Co.'s mine in southern Louisiana, unique material handling problems exist at the producing area where all material must be transported by water. The application of modern material handling methods in the mining industry has, for the most part, been concerned with the loading and transporting of ore. The handling of supplies, usually an intermittent operation, has so far been done mainly with manual methods in connection with highway trucks. Operations of the Freeport Sulphur Co. at its Grand Escaille location, 55 miles south of New Orleans, were no exception to this general rule a few years ago. Despite exceedingly difficult conditions in sea-level marsh country, however, our company modernized and came up with a per ton handling cost which is conservatively estimated at 50 per cent of the old method.

**Comparative Cost on Bagged and Miscellaneous Materials**

| Man Hours | Machine | Rate | Unload Cars & Load Freight Boat | Unload Freight Boat Haul & Stack | Total |
|---|---|---|---|---|---|
| 8 | | $1.40 | $11.20 | | |
| 4 | Lift truck | 2.00 | 8.00 | | |
| 8 | Lift truck | 2.00 | | $ 16.00 | |
| 20 | | | $19.20 | $ 16.00 | $ 35.20 |
| | Handle 40 tons. Cost per ton by lift trucks. | | | | $ .88 |
| 24 | | $1.40 | $33.60 | | |
| 36 | | 1.40 | | $ 50.40 | |
| 4 | Tractor & wagon | 2.00 | | 8.00 | |
| 64 | | | $33.60 | $ 58.40 | $ 92.00 |
| | Handling cost 40 tons by old method (per ton) | | | | $ 2.30 |
| | Saving per ton | | | | $ 1.42 |

If bagged material had to be stored before using, handling cost by new method would show additional savings.

Rate for machinery includes operator.

# T OF HANDLING IN Half

***the handling of supplies in a mining operation, re large quantites of bagged material, lumber, moved. It is significant that modernized proce- ate readily. This paper won sixth prize of st FLOW Cost Analysis Contest.***

▲ **FORK LIFT TRUCK** leaving freight boat with a load of bagged chemicals. See table below.

As the hot, molten sulphur comes to the surface in the wells it is pumped through heated lines a mile long, which discharge into bins where the material is solidified in 100,000-ton blocks. After blasting, the sulphur is loaded by modern power shovels to conveyor belts, with the latter delivering to 700-ton canal barges. These are towed 10 miles through a canal to the company's town of Port Sul-

▶ **STRADDLE TRUCK** hauling pipe. Elevated roadway sections are no problem. Wagons were once used.

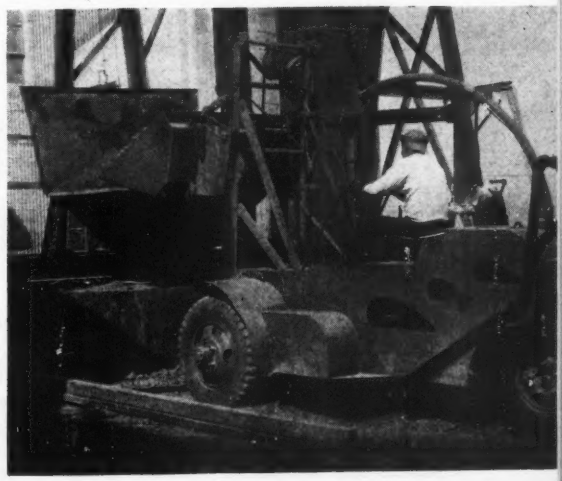
**Comparative Cost of Handling Lumber**

| Man Hours | Machine | Rate | Unload Cars & Load Barges | Unload Barges & Haul to Job | Total |
|---|---|---|---|---|---|
| 4 | Large crane | $4.50 | $18.00 | | |
| 16 | | 1.40 | 22.40 | | |
| 8 | Small crane | 3.50 | | $ 28.00 | |
| 32 | | 1.40 | | 44.80 | |
| 8 | Straddle truck | 2.50 | | 20.00 | |
| 68 | | | $40.40 | $ 92.80 | $133.20 |
| | Cost to handle car of lumber, 20,000 bd. ft., 50 tons—by cranes and straddle trucks (per ton) | | | | $ 2.66 |
| 56 | | $1.40 | $78.40 | | |
| 8 | Tractor & wagon | 2.75 | | $ 22.00 | |
| 72 | | 1.40 | | 100.80 | |
| 136 | | | $78.40 | $122.80 | $201.20 |
| | Cost to handle car of lumber, 20,000 bd. ft., 50 tons—by old method (per ton) | | | | $ 4.02 |
| | **Saving** per ton | | | | $ 1.36 |

If lumber had to be stored before using, handling cost by new method would show additional savings.

Rate for machinery includes operator.

▼ **SCOOP TRUCK** is well suited to operation in which large volume of bulk materials must be handled.



NEW ANOTHER MATERIALS HANDLING FIRST

RIDING TYPE "JACKLIFT" ELECTRIC TRUCK

*Now you can ride the walking type "JackLift"*

**SAVES LEG WORK** on the long hauls . . . Saves money all around the plant . . . on regular runs . . . in cramped quarters or narrow aisles.

**REDUCE COSTS** with this easy-maneuvering "Standrive" dependable "JackLift" Electric Truck. Operator rides or walks. Operates truck with handle in every position . . . All controls in the handle head . . . Instant smooth-action electric brake.

Platform and Pallet models — capacities 4000 and 6000 lbs. Tractor model for trailer trucks. Low maintenance. High efficiency. Long life.

MULTIPLY MANPOWER LEWIS-SHEPARD

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REPRESENTATIVES IN PRINCIPAL CITIES (Lewis-Shepard) CONSULT YOUR PHONE DIRECTORY

"STANDRIVE" POWER FORK TRUCKS • "JACKSTACKER" ELECTRIC TIERING TRUCKS
"JACKLIFT" ELECTRIC TRUCKS • STACKERS • CRANES • SKIDS • PALLETS
HYDRAULIC AND MECHANICAL HANDLIFT TRUCKS • FLOOR TRUCKS • RACKS

phur on the Mississippi. Here the sulphur is reloaded into railroad cars, river barges and ocean-going vessels by means of modern bridge cranes and a conveyor system at a rate of 400 tons per hour.

### Loading Time Is Cut 66 Per Cent

It should be borne in mind that fill had to be pumped into this marsh country before piles could be driven to support workers' homes and the mining plant buildings. (During construction men worked in mud up to their arm pits.) Consequently, all land transportation at the mine rolls on ramps built of timber and planks; while some are supported on piling, others are placed on filled ground.

To produce sulphur at a rate of 3,000 tons per day requires large quantities of pipe, lumber, dynamite, chemicals, drilling mud, cement, steel, and miscellaneous supplies. Originally, bagged materials from railroad cars were unloaded by manual methods and reloaded into barges, where the bags were hand-stacked. At the mine, the bags were again moved off by manual means and loaded on trailers that were hauled by a tractor. If the bags contained chemicals for the water-treating plant, they were unloaded from the trailers and stacked by hand in a section of the power plant. Sometimes such chemicals went to the warehouse first, which meant two additional handlings.

Now, such chemicals are loaded onto pallets in the railroad car and hauled by lift truck over a hydraulic span and thus stacked on a self-propelled vessel. After a 60-mile trip through canals, lakes and bayous to the mine, the pallet loads are taken off by fork lift trucks, transported to the power plant, and stacked. Since most loads weigh over a ton, fork lift trucks of 4,000 lb. capacity are used.

Formerly, 1.6 manhours were required for handling a ton of chemicals—now about .5 manhours. This includes placing on pallet, transporting to freight boat, unloading from boat, hauling 800 ft. to power plant, and stacking. To-

day's per-ton cost is about $.90 per ton, while the former manual method at present rates would be approximately $2.30. A similar saving was made on bagged material going to the filter plant.

### Labor-Aiding Job In Difficult Field Area

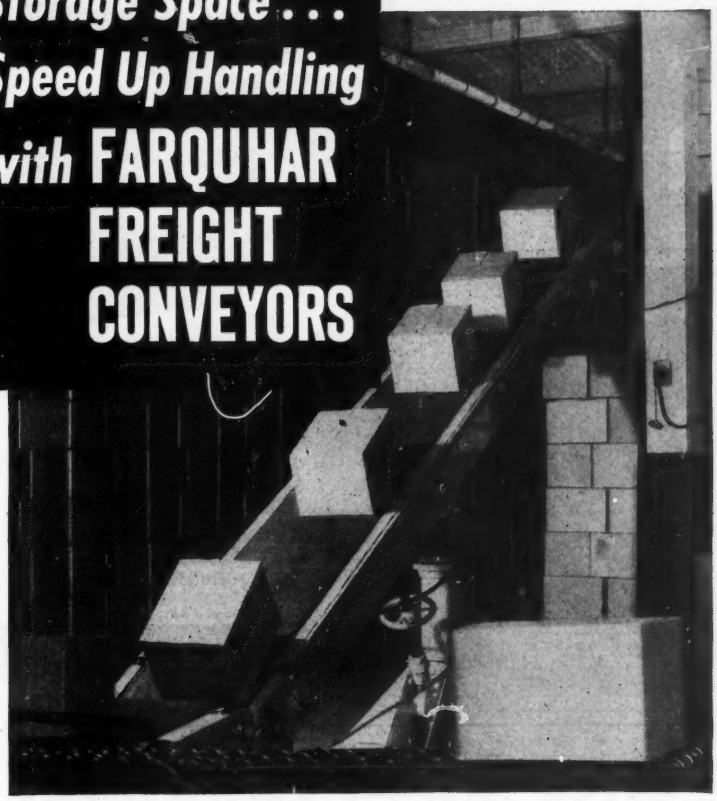
In the mining or field area—a 500-acre island surrounded by levees—a number of labor-aiding machines have been introduced in the past five years. Even though areas where drilling and producing operations are carried on are on ground raised to an elevation of six ft. above sea level, this ground is not capable of supporting the types of roads built on firm soil.

All transportation is carried on ramps built of lumber. Three-in. gum planks are placed on the ground, pine stringers are then placed on these and decked with three-inch green lumber. The latter is topped with two-inch gum planks laid parallel to the line of travel to serve as a wearing surface and make a smooth roadway. The nature of the drilling and producing operation requires that much of this lumber be picked up and relaid at new locations. This in itself becomes a sizable material handling job, aside from the handling of new lumber in quantities of about 1,000,000 bd. ft. per year.

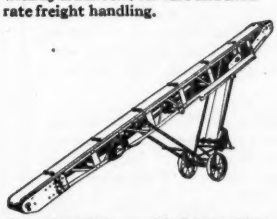
Lumber is unloaded from cars and placed on five-car barges in one handling by means of crawler-mounted cranes with 50-ft. booms. It is unloaded by tire-mounted cranes and spotted on straddle truck bents. Six-ton capacity straddle trucks pick up these packages of lumber and put them in storage on idle ramps or deliver them direct to new ramp building locations.

The straddle truck can deliver the lumber (in 12 ft. and 18 ft. lengths) within a few feet of the advancing ramp. Planks for the bottom mat and decking must be turned at right angles to the straddle truck package. (The handling of these 200-lb. boards is slow and hard work.) Recently we started the practice of having the straddle


Eliminate "DEAD" Storage Space . . . Speed Up Handling with FARQUHAR FREIGHT CONVEYORS



Farquhar Conveyor Model 435-FM with hydraulic lift for fast and accurate freight handling.



Farquhar Conveyor Model 431-EW for heavy-duty handling of bags, boxes, cartons.

FARQUHAR Freight Conveyors (Model 435-FM shown here) move bags, bales, boxes, cartons and bundles *faster, cheaper, easier,* when your handling operations call for loading, piling, stacking, horizontal conveying, moving from floor to floor or eliminating *"dead"* storage space.

All Farquhar Freight Conveyors are designed with one purpose in mind . . . *to cut handling costs,* no matter what the handling problem may be. Farquhar Conveyors are flexible, can be set up singly or in tandem. Models available in various sizes and mounting styles.

See Farquhar first for the right materials handling conveyor for your job. Tell us your handling problem . . . we'll see that you get the information you need.

Write A. B. FARQUHAR COMPANY, 206 Duke Street, York, Pennsylvania, or 616 W. Elm St., Chicago 10, Ill.

HYDRAULIC PRESSES
FARM EQUIPMENT
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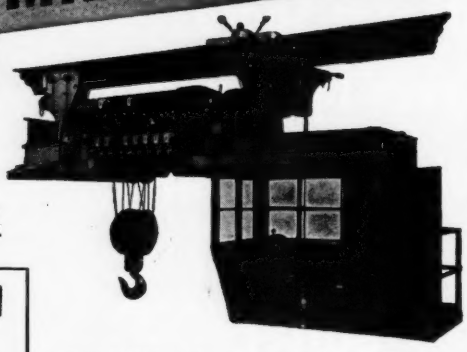
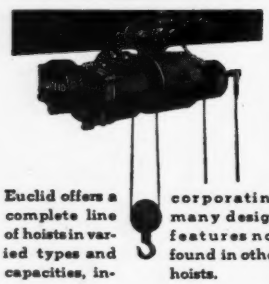
Farquhar PORTABLE OR PERMANENT MATERIALS HANDLING CONVEYORS

EVERYTHING YOU WANT IN A MILL TYPE HOIST



Write for Literature Describing EUCLID CRANES and HOISTS.



Euclid offers a complete line of hoists in varied types and capacities, incorporating many design features not found in other hoists.

• This 15 ton Heavy Duty Mill Type Hoist is designed and built especially to render efficient, economical service.

It features: MILL TYPE MOTORS—MAGNETIC CONTROL—MASTER SWITCHES IN CAB—DYNAMIC LOWERING—HYDRAULIC TROLLEY BRAKE—SPRING BUMPERS—SAFETY FACTOR OF 8.

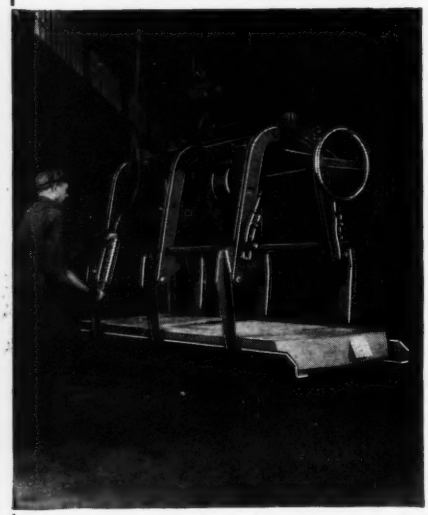
Here is *power* when you want it and *strength* where you need it with coordinated precision control for ease of operation.

EUCLID CRANES AND HOISTS Raise Profits

THE EUCLID CRANE & HOIST CO.

1362 CHARDON ROAD • EUCLID, OHIO

"Easy Sheet Handling *with a* C-F LIFTER"



This is the easy way to move sheet steel. One man and this C-F Lifter can handle many tons of sheets per day with ease, speed and economy.

C-F Lifters have infinite opening and closing adjustments of the jaws permitting them to handle many varying sheet widths. These adjustments are made by the operator in a few seconds.

If your production involves the use of sheet steel, a C-F Lifter will save you many times its cost in the handling speed and economies it will effect.

*Write for the bulletin "C-F' Lifters". It illustrates the many advantages of these material handling tools.*

*C-F Lifters are made in sizes to handle 2 to 60 tons in standard and semi-special designs.*

CULLEN-FRIESTEDT CO.
1320 S. Kilbourn Ave., Chicago 23, Ill.

truck set the package down at an intersection of ramps and move a part of the package by lift truck to the edge of the advancing ramp. Since this method brings the boards at right angles to the center line of the ramp, the boards can be lifted off the forks into place without carrying, and the truck advances on the loose planks as fast as they are put in position.

Previously, lumber was unloaded by hand from barges onto wagons. When it had to be stored, extra board-by-board handling was required.

Ramp construction is an intermittent operation, and accounting records are not set up to show material handling costs separately. However, ramp building material handling costs (we know) would be approximately double of what they are now if the old methods with their large crews were still in practice. In 1948 the labor cost in building ramps was $35,000 with the new methods; the haphazard old way of doing this job would entail an additional expenditure up to $15,000, according to estimates.

### Rolling Pipe Comes High

Pipe for casing the sulphur wells, pipe for production, and surface pipe for transporting the molten sulphur to stockpiles is also handled by straddle trucks which travel on the plank roadways). Pipe was formerly rolled off the barges and up onto wagons—by the muscular effort of 10 men. Now a crane operator and four men place the pipe on straddle truck bents (with a corresponding reduction in handling time). Pipe arriving by freight boat is usually placed by lift trucks on the bents, which are spotted on the dock. The ramps (roadways) are level except where a bridge is built over pipe lines. The straddle trucks negotiate these raised bridges without difficulty since they can elevate their load several feet above the ramps. Forty-ft. long pipe is now transported in this manner. Such lengths would have been impossible to handle on wagons.

The four straddle trucks in serv-

ice also handle, in addition to lumber and pipe, such miscellaneous loads as large tool boxes, machinery, scrap iron, cement, etc.

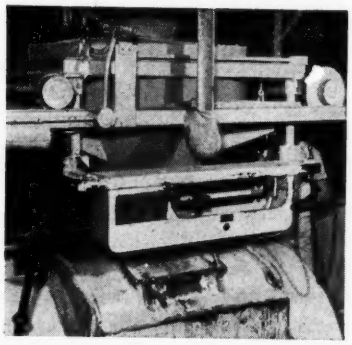
### Many Supplies Reduced To Load Units

The warehouse and repair shops are located a mile from the mining area, and transportation is by water. Heavy machinery and fabricated pipe are hauled by freight boats; the straddle trucks can drive onto these vessels and deposit their load with a minimum of labor. Such items as oxygen cylinders, plate, etc., are handled on the forks of lift trucks without load carriers.

In the shop, scrap iron was formerly hauled in wheel barrows and was then moved from a common pile (frequently by manual means) to barges for shipment by railroad. Now pallets are stationed around the welding, pipe, blacksmith and machine shops, and such scrap as steel, cast iron and copper is placed separately on them. Lift trucks transport these loads (up to 2000 lb.) onto the freight boat without the cost of rehandling. In certain cases palletized scrap is loaded on barges by crane.

We use 48" x 54" hardwood stevedore type pallets, which are

**ACCURATE MEASUREMENT** of dry baking ingredients is rapidly accomplished with this 1000-pound batching hopper scale at Jacob Laub Baking Co., Cleveland. Installed on an overhead track, the scale hopper is filled by moving it under one of three storage hoppers



equipped with automatic shut-off spouts which close when the desired amount has been discharged. The scale hopper has an electric vibrator, operated by pressing the button seen under the weighing beam, which shakes the weighed ingredients into the dough mixing machine.


# The LOAD DISPATCHER

**A RUGGED RAPID MATERIAL HANDLING TRUCK — CAPACITY 3,000 POUNDS**

**At this busy southern machine shop, a Load Dispatcher tractor handles a three car tow easily in a manner that amazed the management in and around surroundings that used all the floor space allotted to storage and crowded the aisles to a high degree.**

The extreme maneuverability of the Load Dispatcher is one of its many qualities that adapts it so readily to the requirements of busy factories, foundries, warehouses, etc., where floor space is valuable and at a premium. It is handy and a money maker on hundreds of jobs where the aisles are narrow and crowded and the going is tight.

Its first cost is amazingly low because of its utter simplicity in design which assures also the very minimum in time out and expense for maintenance and the surprisingly low cost for daily operation. The Load Dispatcher needs no transmission —no clutch—no radiator, no anti-freeze—no electric batteries, no standby or recharging equipment.

The Load Dispatcher is a well-built, strong device produced in one of the best equipped factories in America for precision work.

## A Remarkable TRUCK at a Remarkable PRICE!

PALLET CARRIER P2748

Now standard equipped with
- Water Muffler
- Protectoseal Gas Tank and Cap
- Totally Enclosed Mercury Ignition Switch

You will be interested in the many unique, practical features of the Load Dispatcher. Write for catalog. *Some valuable territories open for distributors who can qualify.*

**SCHWITZER-CUMMINS COMPANY**

*Material Handling Truck Division*

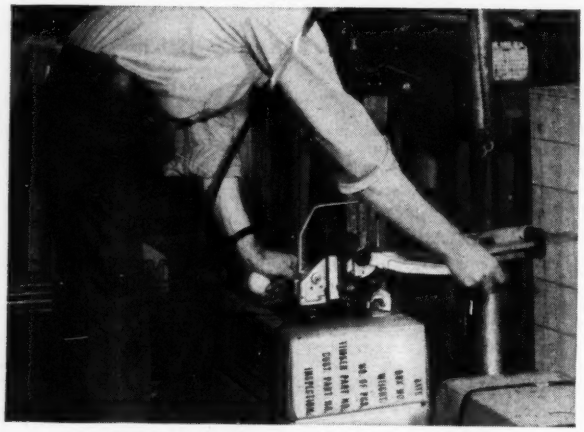
1125 MASSACHUSETTS AVENUE • INDIANAPOLIS 7, U. S. A.

# 9 out of 10 companies

## can save on shipping with

# ACME STEELSTRAP

*45,000 users have proved it . . .*



Timken Roller Bearings are boxed neatly, securely, and economically—with Acme Steelstrap!

### *How Timken cut packaging time!*

Yes, this company cut packaging time when they set up a packaging production line using Acme Steelstrap and Acme equipment.

But that's not all. The appearance of the package was improved and it was made stronger and easier to handle in pallet lots. The expense of dunnage was reduced!

If you box, bundle, crate or bale your product, you, too, should be able to make important savings with Acme Steelstrap and Unit-Load Band. Ask an Acme Shipping Specialist to make a free analysis of your packaging and shipping operations. Or ask for free booklet, "Savings in Shipping." Mail the coupon today!

STRAPPING DIVISION

**ACME STEEL COMPANY**

NEW YORK 17 ATLANTA CHICAGO 8 LOS ANGELES 11

ACME STEEL COMPANY, Dept. F-89
2838 Archer Avenue, Chicago 8, Illinois

☐ Send free booklet, "*Savings in Shipping.*"
☐ Have representative call.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____


very flexible since they can be handled by cranes with slings. Loads of scrap can thus be dumped directly into railroad cars. Although handling of these pallets by straddle truck was not anticipated, it was found that they had the correct width for these vehicles. The overhang allowed the trucks to pick them up without using bents.

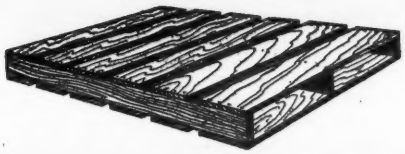
No lift spans are available at the five mine docks where materials are transferred to shore. Two boards, each 12 x 3 ft. and constructed of three-in. gum lumber which is covered with non-skid steel plate, enable lift, straddle and highway trucks to travel on and off the freight boats. Too heavy to be moved by hand, these ramp boards are power handled by fork lift trucks.

### Modern Tools For Efficiency, Safety

The equipment for these diversified handling operations consist of four 12,000 lb. straddle trucks, four 4000 lb., one 6000 lb. and one 2000 lb. fork lift trucks; also a number of tractors, highway trucks, and crawler and tire mounted cranes. A three-wheel scoop truck, included in the exhibits, handles bulk materials.

Accounting methods do not allow material handling costs to be kept separate, since much of the handling is part of construction and maintenance work. Consequently the cost of handling by previous methods cannot be segregated from cost sheets. However it is conservatively estimated that handling by present up-to-date methods requires less than half the manhours formerly required. This is illustrated in the tables.

In addition to the direct savings, important indirect savings resulted because of the reduction of accidents. The former manual handling of pipe and lumber resulted in injuries to feet and hands. This was the major portion of our accidents. It is significant that accidents due to the handling of materials have been practically eliminated.

# ON THE  PALLET

## NEWS • VIEWS • TRENDS

THE Berlin airlift has emphaiszed the economy and durability of the paper bag for large operations. When the lift started a year ago, coal was packaged and flown in duffel bags, at a cost of $3.80 per bag. The Army used up $380,000 worth of duffel bags which were on hand, 3,000,000 originally designated for other uses, plus 5,000,000 British Navy sacks. In January, the Army decided to use heavy paper bags at a cost of 30 cents per unit. These containers wore well, and frequently one unit was usable three times. Scrap paper was sent to the pulp mills.—*Courtesy, The American Paper Converter, May, 1949, and "Paper News."*

THE National Industrial Advertising Association has recently completed a "Survey of Industrial Buying." An analysis of 512 purchases by industrial firms was made. Among the conclusions which may be drawn are: 1. Members of top management are the dominant influence in first stating the need for new production machinery or capital investment purchases. They initiated the buying of machinery in approximately 50 per cent of the equipment purchases. 2. The purchasing agent, according to tentative conclusions drawn, is relatively insignificant at the early stage of "stating the need," but he made the final choice in 21.3 per cent of the purchases of production equipment.—*Courtesy, The "Newsgram," published by the Hyster Co.*

W. LAWRENCE KENNEDY, sales manager of The Sisalkraft Co., manufacturers of reinforced waterproof papers, died recently at the age of 48. In 1945, Kennedy was appointed manager of the company's New York office, and in 1947 became sales manager, with headquarters in Chicago. Ray H. Anderson, who has been with the sales department since 1939, has been appointed to succeed Kennedy.

FORK trucks, industrial towing tractors and handling attachments manufactured by the Clark Equipment Co. are to be sold exclusively through a nation-wide organization of independent franchised dealers, according to an announcement by George Spatta, president of the company. In most instances, key men of the former branch organizations, factory-trained by Clark and thoroughly experienced in their sales territories, have been franchised as dealers, or have been selected as partners in the newly-established dealerships.

THE first crane truck, model 255-A, has been shipped from P&H's large, recently completed truck crane plant, according to a report by H. Menck, vice president and works manager of the Harnischfeger Corp. This new plant, designed especially for the manufacture of truck cranes, is located on a 16-acre tract of land in Escanaba, Mich. The modern building covers 60,000 sq. ft. Truck cranes, trucks included, are built complete in the new facility. It contains general offices, engineering and drafting facilities. The various P&H models are line produced, with welding, machining and assembly operations facilitated by five P&H overhead electric cranes ranging from three tons to 15 tons capacity.

CONSTRUCTION of a six-story warehouse was announced by Kimberly-Clark Corp. The structure will adjoin the company's Lakeview mill in Neenah, Wis. The new warehouse, including basement, will contain nearly 260,000 sq. ft. of floor space.

THE first Plant Maintenance Show and Exposition devoted exclusively to cost reduction through improved installation, operation and maintenance of equipment and services in factories, warehouses and other plants, will be held in Public Auditorium, Cleveland, Jan. 16-19 inclusive. A four-day conference on plant maintenance methods will be held concurrently with the show. It will emphasize those aspects of plant operation not concerned with direct production but whose share in total costs is a considerable factor.

ADDITIONAL plant facilities for Ruger Equipment Co., Inc., are being built at Uhrichsville, Ohio. The new plant is expected to be in full production by July first. The company manufactures hydraulic floor and truck cranes.

AT A RECEPTION and dinner at the Lancaster Country Club, Buffalo, Almond H. Snyder, chief design engineer for the Gould Storage Battery Corp. was honored on the completion of 50 years of continuous service. His career with Gould began as blueprint

*(Turn to page 53)*

## CRANE SPECIFICATIONS

*(Continued from page 16)*

End trucks may be of the rotating axle or fixed axle type as specified by the crane manufacturer.

The bridge end trucks shall be constructed of structural steel forming a box section, heavily reinforced to provide a rigid structure. Safety lugs shall be provided to prevent excessive drop in case of axle failure. Substantial guards shall be provided in front of each wheel and shall project below the top of the runway rail.

### Bridge Axle Bearings (Anti-friction)

Anti-friction bearings used on bridge axles shall have ample capacity to insure an average bearing life of at least 5000 hours with the trolley and rated load in a position to produce the maximum wheel load. Bearings shall be provided with pressure lubrication. Bearings shall be designed as far as practicable to exclude dirt and prevent leakage of grease.

### Bridge Axle Bearings (Bronze)

Bronze bushings used on bridge axles shall be designed so that the maximum bearing pressure in pounds per square inch with the trolley and rated load in a position to produce the maximum wheel load shall not exceed 1000 pounds. Bearings shall be provided with pressure or oil wick lubrication. Bearings shall be designed as far as practicable to exclude dirt and prevent leakage of grease or oil.

### Bridge Wheels

The bridge wheels shall be double flanged with treads accurately machined or ground to size in pairs. Wheels shall be chilled car wheel iron, cast, forged, or rolled steel. Wheels shall be designed to carry the maximum rated load under normal conditions without undue wear. Proper clearance shall be allowed between the wheel flanges and the rail head. Tapered tread wheels may be furnished when recommended by the crane manufacturer.

### Gearing & Shafts

All gears shall be steel. The type of gears to be furnished shall be specified by the crane manufacturer.

Pinions shall be rolled or forged steel.

They shall have teeth machined from solid blanks and should be pressed on and keyed to the shaft. The gearing in the motor reduction at the center of the span shall be enclosed and should operate in an oil bath or in soft grease.

All shafts, except the bridge cross-shaft sections which do not carry gears, shall be machined true to size at bearing and gear fits. Intermediate bridge cross shafts may be commercial shafting. Bridge cross shaft couplings shall be compression or flange type. Couplings shall be provided at each end truck and each side of the motor gear reduction.

### Gear Case & Cross Shaft Bearings

Bearings may be roller, ball, or bronze bushings. The type of bearings to be furnished shall be specified by the crane manufacturer. Bearing housings shall be split or so designed as to permit easy removal of the shaft. All bearings shall be provided with oil bath or pressure lubrication. Bearings shall be designed as far as practicable to exclude dirt and prevent leakage of oil or grease.

### Bridge Brake

The bridge travel shall be provided with a 100% torque brake mounted on the bridge motor extension shaft. The brake shall be provided with removable friction surfaces. It shall be operated by a foot lever located in the operator's cab.

### Bridge Footwalk

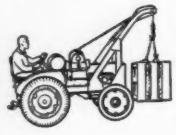
A wide footwalk with a substantial hand rail shall be provided the full length of the driving girder. The hand rail shall be at least 42 inches high and provided with an intermediate railing. The footwalk shall be wood or checkered steel plate as specified by the crane manufacturer. It shall be protected on all exposed edges by a 6 inch toe guard.

### Operator's Cab

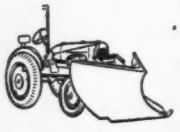
The standard location of the operator's cab will be at one end of the crane bridge on the driving girder side. It shall be so located as not to interfere with the hook approach. The oper-

**ONE UNIT...MANY JOBS...LOW COST**
**The All 'Round Allis-Chalmers IB Tractor**

Here is a tractor built low, fast and powerful — for speeding up handling and maintenance jobs. Highly maneuverable — only 8 feet long, 4½ feet wide, turns in a 7 foot radius. Has 14-inch ground clearance . . . unusual stability — travels over railroad tracks, rough planking, up steep ramps . . . speeds up to 10 m.p.h. Service facilities are nation-wide.



Available with a variety of attachments that greatly broadens its usefulness.



**CRANE JOBS** — A utility lifter for industrial plants, on docks and loading platforms . . . wherever loads are lifted, moved and spotted. Handles up to 1500 lbs. Choice of 8, 10 and 12 ft. boom heights.

**SNOWPLOW** — Keeps driveways, docks, platforms open for year 'round business. Two models, the "V" and tripping blade snowplows.

**SWEEPER** — Keeps railroad platforms, bridges, warehouses and other high-traffic surfaces clean — 56-inch sweeping path.

**WINCH** — Performs many pulling, hoisting and skidding jobs that normally would require heavier, more expensive equipment.

● Allis-Chalmers builds a wide line of wheel and crawler tractors for material handling of all kinds — loading, carrying, pulling. See your Allis-Chalmers dealer or write for literature.

**ALLIS-CHALMERS**
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

ator's cab shall be open type for indoor service unless otherwise specified.

Provision shall be made in the operator's cab for the manually operated controllers or master switches, main line disconnect switch, bridge brake foot lever, and all necessary wiring and fittings.

The controllers or their operating handles shall be located as shown in Figure 1 of the Appendix, for the cab location specified. If other arrangement of the controllers is required it shall be specified by the purchaser.

*(The second and concluding part of these Specifications will appear next month)*

## PLANNED CONVEYOR ASSEMBLY

*(Continued from page 14)*

five ft. or extended to a 10 ft. length, or curved on a horizontal plane. (It is extended and/or curved when feeding is done directly from the overhead chain conveyor.) The carrying surface of this portable equipment is sloped by means of its adjustable stands.

### Steel Belt Conveyor. Special Features

As shown in the accompanying flow sheet, the assembly line is L-shaped. The shorter section is 36 ft. and the longer one 110 ft. This conveyor is a steel apron type, with work stations arranged on both sides. The shorter section of the line serves for preparation of the box, such as attachment of covers, catches, etc.

While the line has a variable speed drive, it is regularly run at 12½ FPM, which is best adapted to the many sizes of closures, or boxes, being assembled. At one time the rate of travel was varied according to the size of item, but time studies made on the operation convinced us that best results were obtained by maintaining a uniform rate of travel, and changing, instead, the assembly crews.

At the junction point of the two lines we used to have difficulty with the smallest size boxes (4" x 8"), which were blocked in making the transfer from one line to the other. This was remedied with the installation of three powered rollers at this point, which avoid any blocking.

Safety, optimum work levels, and elimination of strain on the part of the operators were primary considerations in planning the conveyor assembly. A safety stop on the line is instantly accessible to any operator, who need merely reach out to pull the switch cable which extends the full length over the center of the 24" wide steel belt.

The girls are seated on adjustable chairs, and hence can maintain the most convenient work level in relation to their height. Portable work tables are used throughout. These are hooked over a strap metal rail running the full length of both conveyor sections. Thus rearrangements in accordance with changing production needs are quickly made. Electrically powered screw drivers are suspended from overhead lines. A sponge rubber pad on each table aids every girl in assembling nuts and washers. A supply of these small parts is arranged for her convenience in tote pans on a two-tier shelf.

Stop WASTE MOTION
in handling PARTS for PROCESSING

MHS work carriers cut handling time and costs, prevent delays and traffic bottlenecks where varying production rates require intermittent flow of materials.

These carriers are portable storage racks which can be handled by lift truck, mounted on casters or dollies for towing, or moved by overhead crane. They can be supplied with dunnage rails, special brackets or flooring to protect any type of part. MHS work carriers facilitate delivery at the right time and place, eliminating handling in and out of storage bins.

Made in sizes to meet your requirements. Let us send you our free catalog giving comprehensive details.

Lower Costs!

ALL TYPES OF HANDLING EQUIPMENT—COMPLETE ENGINEERING SERVICE ON MATERIALS HANDLING PROBLEMS

MHS

MECHANICAL HANDLING SYSTEMS, INC.
Manufacturing Engineers
4620 NANCY AVENUE DETROIT 12, MICHIGAN
Offices in Principal U. S. A. Cities

Component parts are supplied by stock handlers, and are placed beside each operator on a stand for accessibility. Electrical subassemblies are made up in an area adjacent to the second half of the line. These fragile components are placed in wooden shop boxes (12½" x 24"), which are stacked on castered dollies for delivery to the individual assembly benches.

It should be pointed out that no girl ever lifts up a unit after assembly starts (on the 110 ft. section of the line). She merely slides it off the smooth surface of the steel belt and onto her work table. Since a medium sized switch box weighs 17½ lb., it can be appreciated that this is an important contribution to minimizing the fatigue factor.

The last 20 ft. of the conveyor travel serves for inspection, where each unit is subjected to tests of all operating parts. The packing operation, which follows, is set up to form a continuous line with the assembly conveyor. The units are packed and palletized as they come off the production line.

*(For this part of the story, turn to the Packaging Mechanics section in this issue.—Ed.)*

**NEW 1949-1950 DIRECTORY**

**The first issue of the FLOW directory of Material Handling Equipment and Accessories was received with great acclaim, and now orders are being accepted for the second, improved issue at $5 per copy. Several sections have been expanded and new ones added. Send your order now.**


*Engineered*

TO REDUCE COSTS ON EVERY HORIZONTAL MATERIAL HANDLING JOB!

SALSBURY TURRET TRUCKS

*Turreteer*

FOR HANDLING ALL MATERIALS ON PLATFORM SKIDS

MAXIMUM MANEUVERABILITY
FULLY AUTOMATIC DRIVE

*Palletruk*

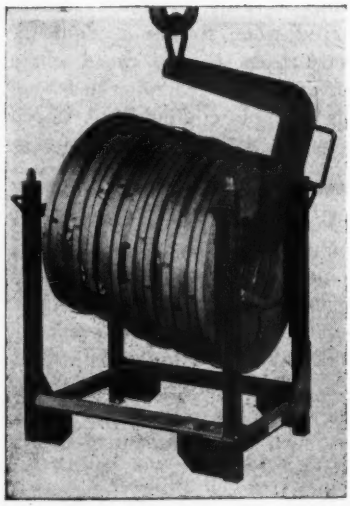
*Turretruk*

Material handling costs go down when Salsbury Turret Trucks go on the job. These features enable the operator, who rides with the load, to move more tons per hour. Each unit has a fully rotatable drive wheel with a 360° radius which provides maximum maneuverability. Fully enclosed cushioned power turret has automatic drive. No gear shifting—infinitely variable ratios from "low" to "high." Finger tip throttle. There is a Salsbury Turret Truck designed to handle any horizontal material handling job. Mail the coupon below for complete information.

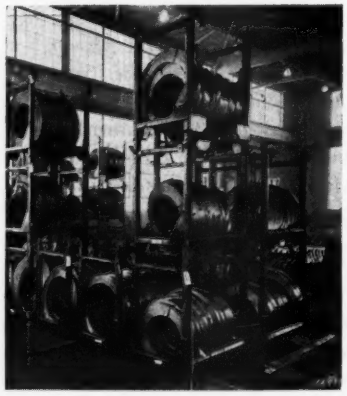
SALSBURY CORPORATION
1161 East Florence, Los Angeles 1, Calif.
Please send information on Salsbury Turret Trucks to:
Name_____
Firm_____
Address_____
City_____ Zone____ State_____

SALSBURY CORPORATION
1161 E. FLORENCE AVENUE
LOS ANGELES 1, CALIFORNIA


**THREE-WAY STACKING RACK—Strip coil in this rack can be handled by fork or platform trucks or overhead cranes. Four-in. or 12-in. underclearances allow entry by rolling equipment, while lugs welded to the tubes permit lifting by crane hooks. The cross tube at one end is swiveled and can be**



**dropped to allow entry of a hairpin hook, as shown. The rack is constructed of 2½" square tubing. Welded**



**construction allows a maximum working capacity (depending on the gauge of the tubing) of 6000 lb. Nesting arrangement is designed for tiering the racks to high ceiling limits.—*Courtesy, Equipment Mfg. Inc.***

**ONLY COLES CRANES HAVE A**

# SAFE-LOAD INDICATOR

PLUS

✔ One Man Control
✔ Reversible Steering (Patented)
✔ Low Maintenance Cost!

**The Safe-Load Indicator**

COLES *"Safe-load"* indicator prevents operator from lifting any loads in excess of rated load at any given point of radius. A warning light directs attention immediately to an overload. Current is cut-off automatically if operation is continued.

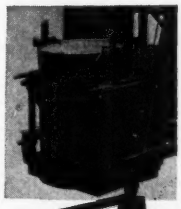
• Coles *"Safe-Load"* indicator provides all around protection to operator as well as to expensive equipment. The unobstructed view from operators cab at front of superstructure furnishes complete visibility, "ONE-MAN" trigger-quick control to all four motions: Hoisting, Swinging, Derricking, Traveling. The four simple controls can be worked simultaneously. Coles Cranes' rugged *"battleship"* construction gives long-life service at lowest maintenance cost—combined with fool-proof operation. Ease of maneuverability, including the Cole patented reversible steering are just a few of the many advantages of the Cole Mobile Crane. "Know-How" gained from 70 years Crane manufacturing experience, Plus . . . World wide distribution has made COLES Cranes a leader. Available in several models in capacities 1½ ton to 15 ton. Write us for prices, literature or the name of your nearest dealer. COLES CRANES, Inc., 4307 S. Paulina Street, Chicago 9, Illinois.

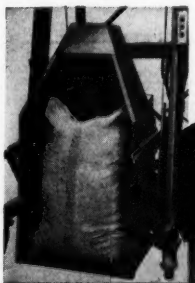
COLES CRANES INCORPORATED



# CESCO DUMPER HANDLES BAGS, DRUMS AND BULK

MULTI-PURPOSE DUMPERS for dumping bags, bulk or drums, as well as single-purpose types save handling time and reduce accidents. Dumping heights range from 5 to 12 ft. Special sizes made on order. Have lifting capacity of 500 lbs.; handle up to 100 loads per hr. ½ H.P. motor controlled by push button. Immediate delivery. Write for 8-page catalog.





DEALERS IN ALL SECTIONS

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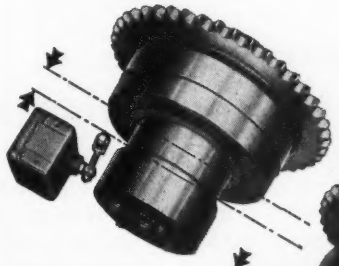
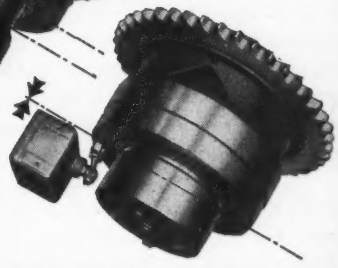
**Write for Bulletin 36-1**

**Pan Type Quench Tank Conveyor which delivers all of even the smallest parts to the unloading station.**



**(Left) Cut-out in normal load position. Note distance between recording ring and limit switch contact.**



**(Right) Cut-out when overload is encountered. Note position of recording ring which has been forced outward to contact limit switch roller.**

Another is the Overload Safety Cut-out which eliminates down time when a conveyor suddenly encounters an overload which without this device would shear a drive pin that would then have to be replaced while everyone on the assembly line waited.

The Overload Safety Cut-out protects the conveyor and drive but it allows the conveyor to be started again immediately the cause of the overload is removed—no waiting to replace shear pins. **Write for Bulletin A-46.** 2414

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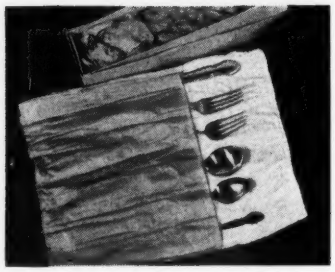

**Individual Table Service**—in pocket envelope lined with KIMPAK.
*Photo courtesy International Silver Company.*

**Electric Waffle Iron**
*Photo courtesy General Electric Company.*

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# PACKAGING MECHANICS SECTION

A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

## CONTENTS


**OVERHEAD CONVEYORS ADD PACKAGING SPACE.** Faced with a problem of limited floor area, this New York company installed conveyors overhead for feeding empty cartons to packing. To move the conveyor from one line to the other, it is suspended from trolley-mounted supports, which are easily pushed between the two lines ..... 46

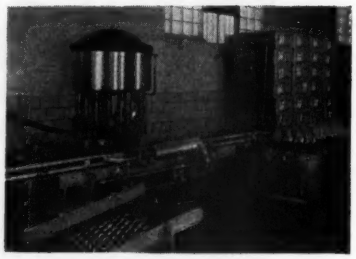
**CONTINUOUS PACKING AND WAREHOUSING ON TWO FLOOR LEVELS.** At the BullDog Electric Co., a clever packing installation includes a pallet elevator-conveyor. It delivers full cartons to the second-floor warehouse as fast as they come from production. Thus, a space handicap on the lower floor is overcome. Protective packaging of the product is as simple as it is effective..... 49

# Overhead Conveyors *add packaging space*

***In this wine bottle filling operation, use of headroom avoided floor congestion; and a trolley-equipped conveyor support gave the mobility necessary for quick change-over between the lines.***

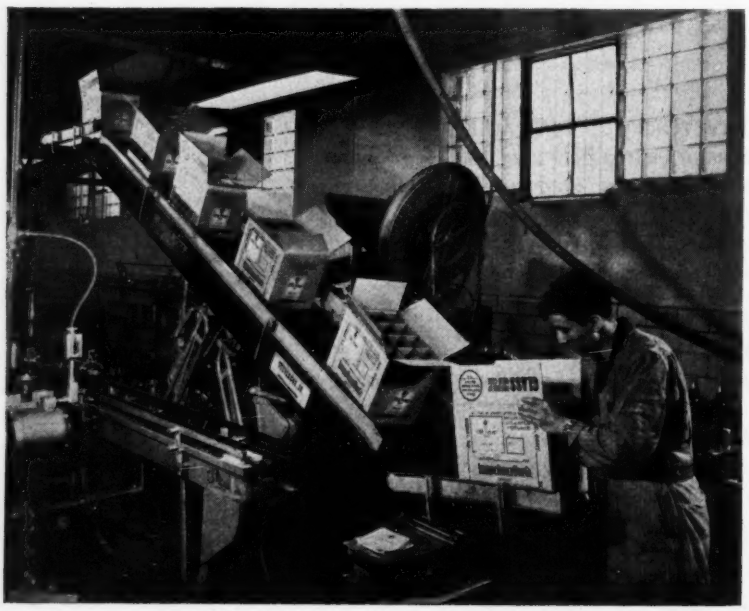
THE Italian & French Wine Co., Buffalo, N. Y., is one of the largest bottlers of dessert and table wine in New York State. Its Old Friar brand is put up in pints, quarts, half-gallons and gallons.

When the company started in 1933, all operations were performed manually. Sometime later filling, capping and labeling machines were installed for the different sized bottles. As the volume increased, a second, more fully automatic line was introduced, parallel to the first, for quarts and pints. (These two sizes account for more than half the total volume.) The original line was then used for the larger containers only. The flow sheet on these pages shows this arrangement.



**CASE UNSCRAMBLER** at right. Cased bottles are placed on tilting plate which feeds containers in upright position. Note filling machine at left.

**OPERATOR REPLACES** reshippable cartons on belt conveyor for transfer to packing stations. Note supports mounted on four-wheel trolleys.



### Ceiling-Suspended Conveyor— No Congestion

The filling room is 25′ x 100′. A little less than half the area is used for storage of cased empty bottles plus a small station for filling and labeling Chianti wine. (The latter operation is not described here.) This leaves an area of about 25′ x 65′ for the two main lines: line "A," for gallon and half-gallon bottles which is 50 ft. long; line "B" for quarts and pints, 60 ft. long.

All bottles arrive at the start of the lines in reshippable cases, which are sent to the end of the line for repacking. An on-the-floor installation was originally considered for this purpose. However, it would have made the narrow space extremely crowded and blocked approaches to much of the machinery. It was therefore decided to install the equipment overhead.

This installation consisted of a

22-in.-wide portable inclined belt conveyor which extended to a height of 10 ft., where it connected to a 15-ft.-long section of gravity wheel conveyor. This in turn was hooked to a detachable metal chute at the discharge end. The system was installed parallel to one of the two lines. The suspended gravity section was supported within two U-shaped angle iron braces (placed about 15 ft. apart) which are attached to the ceiling trusses.

The cases, fed by the portable belt to the overhead line, were discharged via the chute to the packing operators. Inasmuch as both lines are seldom run simultaneously (quarts and pints are run and stockpiled, then the larger units), only one such overhead transfer section was considered necessary.

### A Problem Is Solved

However, the shifting of the overhead gravity section presented a problem, which was solved with a later refinement. In the original installation, ceiling supports for the overhead gravity wheel conveyor were installed adjacent to each of the two lines. When a switch was to be made from one line to the other, the portable belt conveyor was wheeled to the other side of the room and the chute unhooked and respotted. It was quite a job to relocate the gravity section. Two men were required to remove it from its supports, carry it to the other line and climb up and place it within the second set of supports. Not only was time consumed, but it was also an extremely difficult change to make. There was also the danger of dropping the section, which could have entailed a hazard and serious damage.

The solution was the installation of two I-beams, located crosswise in the room, which were attached to the trusses. The upper section of the U-shaped supports were equipped with four-wheel trolleys at each end for travel from line to line. Now, it is a simple matter for one man, in less than a minute, to manipulate the trolley-mounted supports. Shifting of the portable belt and chute presents no problem.

### Automatic Fillers, Cappers, Labelers

This report covers the line for pints and quarts.

Cases of empty bottles (the bottoms of the cases are open) are held beneath a tilting metal plate which, when turned over, places the bottles in an upright position. The case is pushed onto the revolving disc of a case unscrambler and lifted from the glass containers. This device, with a capacity of 48 quart bottles, feeds the glass between guides to a 12-in.-wide bottle conveyor, driven by a sprocket at the head end. Transfer between the several conveyor sections which make up the 60-ft. line is accomplished by revolving discs and guide rails. These and other side rails are adjustable for bottles of different sizes.

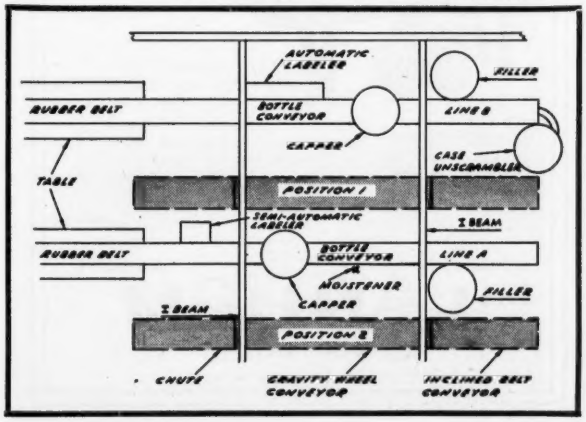
The speed of the line is regulated to a maximum of 98 bottles per minute. This gives an actual production of 2500 cases (12 bottles to a case) per eight-hour day. The lower daily figure allows for any down time and also time necessary for daily cleaning of the equipment and the surrounding area. The company computes production figures over an eight-hour span. All equipment on the line is synchronized with the maximum rate. This was found from time studies to be the most efficient for this equipment and the operators who hand-pack the cases at the end, and another who feeds the unscrambler at the start of the line.

As the bottles travel along the conveyor, they are engaged by a three-ft. section of screw conveyor, which is mounted at one side of the belt. The pitch of the screw regulates the feed into the filling machine. When other sized bottles are run, a screw with a different pitch is inserted.

The bottles are deflected by a guide onto individual platforms which circle the 22-spout filling machine. The platforms are raised to the filling spout where a cam-operated feed regulates the amount of wine. The full containers are then returned to the line.

Safety devices are located at several points throughout the system. If the bottles should jam on the main conveyor, small sections of guide rails are attached to switches which cut the power on all equipment. Ordinarily, the rails act only as a retainer and receive only a

**FLOW SHEET** of dual bottling lines. Overhead transfer equipment is moved to the left of the line which it is to accomodate.




**GENERAL VIEW** of bottling room showing discharge end of overhead conveyor. Line for gallons and half-gallons is in foreground.

light pressure from the containers. If more than normal pressure is exerted, the switch is actuated. Also, if the platforms in the filling machine should fail to lower sufficiently to transfer their load back to the bottle conveyor, the top of the glass strikes a knife-type switch, which stops the filling machine, unscrambler and belt.

### Capping And Labeling

The bottles travel to the automatic capping machine. Inside the hopper for caps, a revolving circular plate at one side (with pins on two-in. centers) picks up the caps and feeds them down a chute into the machine. As the bottles move along, they trip a switch and the chuck places the caps as they move by. Thus, no cap is discharged unless there is a bottle to receive it. The bottles then move between three sets of rubber spinners which tighten the screw-type closures.

Further down the line, the bottles are contacted by a reciprocating bar located just above the conveyor. The bar is equipped with six vertical arms (for an equal number of bottles) which propel the units into the labeling machine. The spacing device then returns to pick up six more containers.

The labels are attached to the front of each bottle, the ends remaining loose. As the bottles move along, concave rams lined with rubber pads affix the labels around the sides. The rams work in pairs. On one side, the bottle is held, while the ram on the other side presses the label against the rounded contour.

### Dual Lines To Packing

As the bottles leave the labeler, a ram pushes every other one onto a revolving plate which feeds to a second line. At this point, the main 12-in.-wide steel belt is replaced by two parallel five-in.-wide sections. The single file of bottles is thus split up into two lines for the packing operation, which is done on a rubber belt running between 15-ft.-long packing tables. The packers are stationed on each side of the tables.

Twelve quart or 24 pint bottles are placed in a case. The cartons, as indicated earlier, reach this station by chute from the overhead gravity wheel conveyor. The cases are picked off the chute by an operator and fed to the packers along the tables. After the cases are sealed, they are skidded and trucked to storage elsewhere in the building, or placed on a portable section of gravity wheel conveyor and sent through an opening in the wall to the shipping room, a distance of some 40 ft.

This report on the Italian & French Wine Co. is a good example of the value of consistent study of equipment and methods in relation to available space and production requirements. The flow engineering described gave the desired filling production rate, without crowding in the slightest the 25′ x 65′ area that was available in the 25′ x 110′ filling room.

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# Continuous Packing, Warehousing On Two Floor Levels

***Simplicity of protective packaging and a pallet elevator-conveyor are two of several features of this packing layout. The handling during assembly is described elsewhere in this issue.***

**By K. MERCIK, JR.**
Asst. Plant Engineer
BullDog Electric Products Co., Detroit

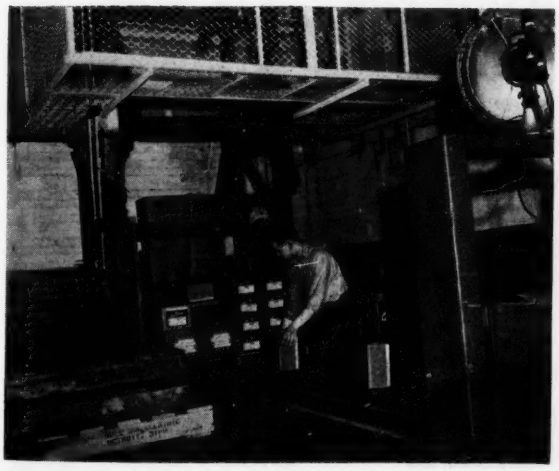
PACKING of BullDog electric switch boxes actually starts on the last five feet of the assembly conveyor, which is described in a separate article in this issue. Directly at the end of assembly an operator applies the simple interior packing that is used. This is a length of three-ply unbleached cellulose with crepe kraft backing. These cellulose strips (in lengths designed for various box sizes) are applied as fast as the units come down the line. The procedure is as follows.

1. The strip is laid over the open cover (which comes this way from the inspector). 2. Raise cover and tuck in ends. 3. Close cover, securing the strip. This cellulose material protects the glossy surface of the unit against marring from possible scratches, as well as the name plate which is also on the cover.

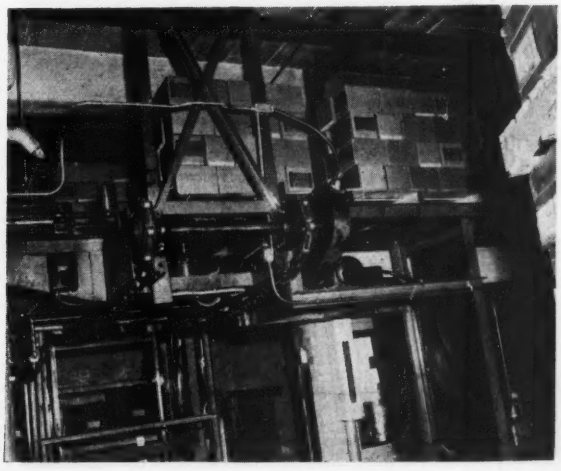
Directly beyond the girl applying the cellulose strips, the units pass to two packers, one stationed on each side of a gravity roller line that feeds to the case gluer and compression unit.

These operators square the corrugated carton flats and slide the completed switch boxes into shipping containers. The latter roll ahead on the 10 ft. gravity line into the top and bottom gluer, which has a capacity of eight cartons per minute. The glued cases next travel

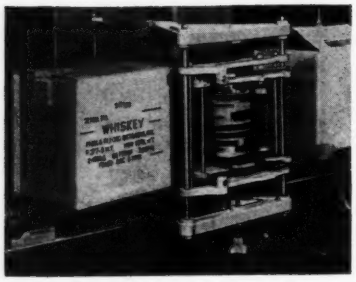
**FROM COMPRESSION UNIT, full boxes are loaded on pallet elevator for delivery to . . . .**



**SECOND FLOOR STORAGE, where transfer device shunts loads to overhead roller line. From here . . . .**



## ELIMINATE HAND STENCILLING!



This carton marker automatically imprints cartons as fast as they can be pushed through the printing device. Uses easily interchangeable rubber type. Has built-in, self-inking reservoir. Will handle various sizes of cartons. Adaptable to conveyor line or packaging machinery. We also make units to print knock-down cartons.

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## PACKAGING MECHANICS SECTION

through an 18 ft. compression unit, whence they are discharged on a 10 ft. gravity roller section. The latter extends to a pallet elevator, which carries the palletized loads to the second-floor storage and order selection room, as described below.

### Solving A Space Problem

The elevator consists of chain-mounted tray-type carriers, mounted on 5½ ft. centers. The trays consist of ¼" steel plate with an angle iron frame (accommodating the standard 36" x 48" pallet). Arms of ¾" x 3" steel are hinged on each side to the powered chain, giving the trays a free swinging action.

The 36" x 48" pallets used are identified with red color at the stringer ends so that they will not be removed to other plant areas. A hardwood pallet is placed on the

DIESEL-ELECTRIC LOCOMOTIVES—Many company-owned railroads are being converted to diesel-electric power. Shown here is an 80-ton locomotive of this type at the Monessen, Pa., plant of the Pittsburgh Steel Co., which is one of three recently purchased. The change is being made in the interest of economy

and efficiency and high availability of the diesel-electrics as compared with steam. Working 24 hours a day, seven days a week, the units handle an average of 10,000 cars a month over 50 miles of intra-plant track. Fueling takes 15 minutes every other day; oil is changed every 80 hours, taking two hours each time. Routine monthly inspections take about eight hours each, leaving the units available for work more than 96 per cent of the time.—**Courtesy, General Electric Co.**


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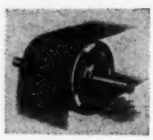

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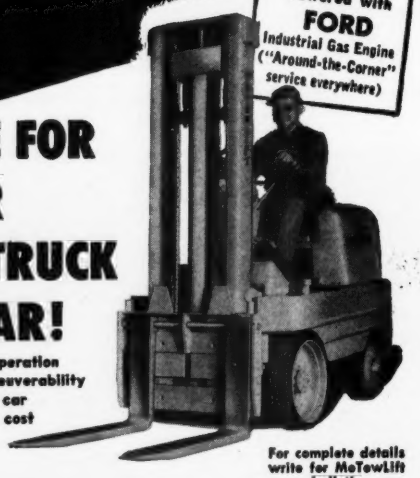

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tray as it comes into position at waist height, and the operator at this station loads it from the roller conveyor which receives the shipping containers from the compression unit. Four layers give a limit load. A press on a button sends the loaded pallet up five ft. (the ascent is stopped by a limit switch).

As the elevator makes one move of five ft. it deposits the "top" load at the second-floor level for transfer on a horizontal conveyor, and at the same time another empty tray is positioned for loading on the lower floor level. Seven trays

**FORK TRUCK** picks off the palletized loads for stacking on stock piles.

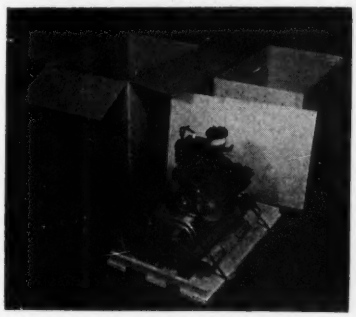
are mounted on the elevator-conveyor.

The horizontal chain conveyor on the second floor has driving lugs which advance the pallet to a pneumatically operated lifting section, which is actuated after a five-second time delay. (The advancing load trips this switch.) The load is thus raised above the conveyor chain at the side and is lined up with an overhead storage conveyor. As the lifting section is raised it trips another switch, which actuates an air cylinder. This pushes the pallet load off the elevating section onto a gravity roller conveyor line which extends for 95 ft. along the warehouse wall at a height of eight ft. above the floor. (The space below is used for storage bins.)

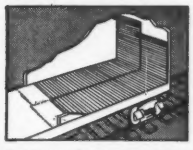
The air cylinder plunger returns to position, tripping a limit switch that releases the air in the lifting section cylinder and dropping it in position for the next load. The loads from the overhead line are picked off by fork truck and tiered in the nearby stacks. Since the overhead conveyor has a capacity of 24 pallets, the pick-off operation can be scheduled so that interference with regular stock selection and shipping operations is avoided.

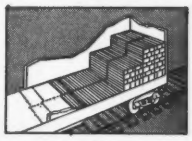
Thus one operator at the end of the compression unit on the ground floor can handle all the production flowing over the continuous assembly-packing line, and thousands of shipping containers are routed automatically to the upper floor level. Since an area adjoining this section on the ground floor is used for storing and crating the larger industrial units—bus ducts, trolley ducts, and large panels—the problem was one of disposing of the lighter units to the available second floor area. The adaptation of the elevator-conveyor solved the space problem by making possible uninterrupted disposal of the switch boxes, at the same time retaining the advantage of pallet handling.

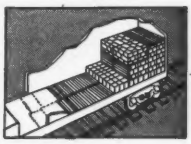
***LAWN MOWERS IN CORRUGATED FIBRE BOXES—One of America's largest lawn mower manufacturers, Heineke & Co., is now using corrugated fibre boxes for shipping its 18" and 20" power lawn mowers which weigh 112 lb. and 140 lb. respectively. For shipping, the mower is first steel strapped to a wooden skid base, then the liner or inner fibreboard sleeve is fitted outside the cross braces of the skid and rested directly on the base members. The unit is***

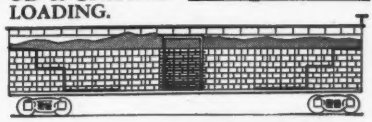


Shippers of cartons using this modern carloading method are FOR it! Once you have tried it, you'll want it, too! It prevents cases from falling into those "voids" or "wells", at either end of the car, caused by jolts a freight car gets during switching or other normal handling. At little cost per car, and only a few minutes' time, shippers can save real money with the FIBREEN METHOD of UNITIZED LOADING.









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# Albion QUALITY CASTERS

"THE BEST FOR LESS"

for every Industrial use

With Patent-Pending Rolled-In Ball Race

HEAVY DUTY CASTERS in Drop Forged Steel with Genuine Timken Thrust Bearing. 6" up to 12" Wheel Diameters.

MEDIUM DUTY CASTERS in Semi-steel and Drop Forged Steel. Double Ball Race. 3" up to 8" Wheel Diameters.

LIGHT DUTY CASTERS in Semi-steel and Drop Forged Steel. Double and Single Ball Race. 3" up to 6" Wheel Diameters.

Available with Semi-Steel, Solid Rubber, Plastic, and Moldon Rubber Wheels.

TRAILER CASTERS—9 x 11 Top Plate—With 8", 10", and 12" Wheels.

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ALBION INDUSTRIES, INCORPORATED
ALBION, MICHIGAN
Sales Offices in Principal Cities


***placed into the container and the flat pad of fibreboard is placed on top of this liner and the flaps closed. Thus, a double thickness of fibreboard is provided all around except on the bottom where the wood skid gives sufficient protection. When the container is sealed, the mower has no point of contact with any part of the box. The smooth surface of the box also facilitates stenciling.*—Courtesy, Gaylord Container Corp.**

RUST PREVENTIVE AGENT—It is now possible to wrap or package steel articles to prevent rust and corrosion even though no coatings are applied to the metal and no precautions are taken to exclude moisture from the packages. This new method of protective packaging employs a volatile corrosion inhibitor on the paper wrap which prevents rusting and corrosion under humid conditions even though the coating is not in direct contact with the metal surface. The "VPI" chemical makes the moisture-formed water entirely non-corrosive to steel. And, because "VPI" is slightly volatile, its vapor permeates the air around the metal part in the package. About 16,000 cu. ft. of air are saturated by approximately one gram of the substance at room temperature. Because its volatility is very low, it may be kept in a package for extended periods of time by the use of simple barrier coatings or laminants.—**Courtesy, Angier Corp.**

TRADE MARK

## Smart Buyers Get RAZORBACK PALLETS

YES, smart buyers are insisting on pallets giving long service with low maintenance cost . . . which is why there are more RAZORBACK Brand Pallets in service than any other brand! Our rounded corner feature is the most important improvement in years. Protect yourself on 4-Way Pallets, Skids, etc. We are licensed under U.S. Patent No. 2,369,944. Contact us or our representatives.

**ARKANSAS PALLET CORP.**
P.O. Box 794-A Phone 6474
PINE BLUFF, ARKANSAS

FIG. 16-24 Two-Wheel Trucks for Every Use

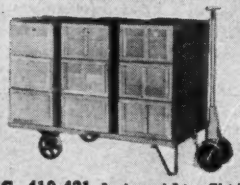


FIG. 419-421 Jack and Live Skid

Casters, All Types, Light, Medium, Heavy Duty

Wheels with Demountable Rubber Tires

## Ask Nutting Engineers

FOR ADVICE ON MATERIALS HANDLING

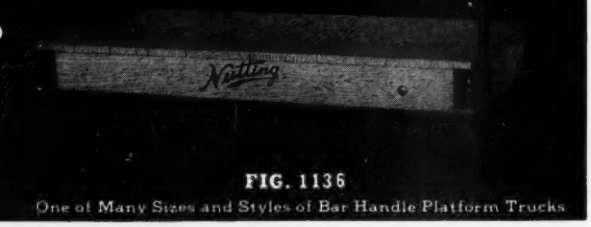


FIG. 1136
One of Many Sizes and Styles of Bar Handle Platform Trucks

## NOW is the time to Engineer your Materials Handling

Your materials handling system needs to be just as carefully planned and engineered as your production set-up, or the design of your products. A planned layout may well be the difference between profit and loss, between smooth-flowing operation and a time-wasting series of bottlenecks. Take advantage of the seasoned experience and valuable advice of a Nutting Engineer. Because the all-around adaptability and versatility of Nutting Trucks has never been excelled, he can advise you on the proper use of trucks with overhead or floor conveyors . . . assembly or production line use . . . interdepartmental use . . . warehouse or shipping room use . . . as well as situations where only trucks should be used.

LOOK in your *Classified Telephone Directory* to contact your nearest Nutting Sales Engineer, or write to us direct. Ask for Bulletin 48-G.

**Over 1000 Nutting Designs**

58 years of specialized, continuous experience in building materials handling equipment is embodied in the Nutting line for your benefit. We supply every need in floor trucks, casters, wheels—including specially designed trucks for specific needs.

## NUTTING TRUCK & CASTER COMPANY

our 58th Year

1603 DIVISION STREET WEST, FARIBAULT, MINNESOTA

## ON THE PALLET

*(Continued from page 39)*

boy in 1899, when the company first entered the battery business. From this position, he advanced to draftsman, chief draftsman, development engineer, chief design engineer, the position he holds today. During Snyder's long service, he has been granted 22 patents and has three pending at the present time.

TRAFFIC deaths dropped one percent in 1948, reaching a total of 32,200 as compared with 32,500 in 1947. However, injuries increased eight percent, according to figures released by The Travelers Insurance Companies. The personal injury total 1,471,000, was an all-time high. he 1947 figure was 1,365,000. Excessive speed headed the list of accident causes in 1948, as it has in most recent years. Youthful drivers, especially those in the 18 to 24 age group, caused more than their statistical share of both deaths and injuries, according to the figures.

C. B. COOK, vice president and export manager of the Elwell-Parker Electric Co. has scheduled a visit to all western Europe. His purpose will be to bring latest mobile material handling practices to representatives located there.

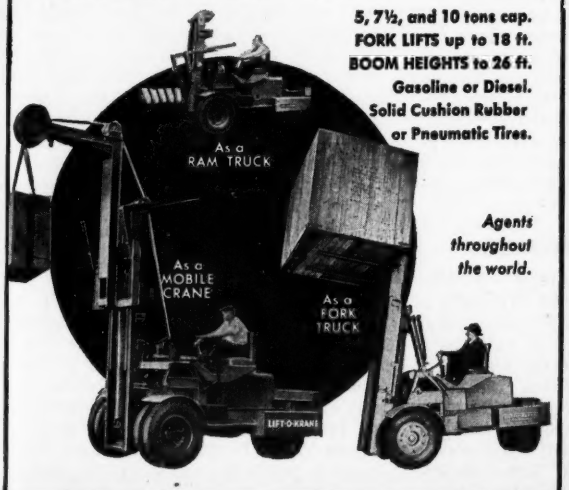

**Buy 1 Machine —Get All 3!**

**LIFT-O-KRANE**

Made by Mfrs. of KRANE KAR

**COMBINATION LIFT TRUCK . . . CRANE . . . AND RAM TRUCK**

For CRANE work, simply fold back the fork arms. For FORK operations, simply detach the boom. With RAM accessory, handle reels, coils, pipe, hollow-center loads. WINCH available for rigging, hoisting, pulling. Manufactured exclusively by SILENT HOIST. Serving many industries. Write for Bulletin No. 65.



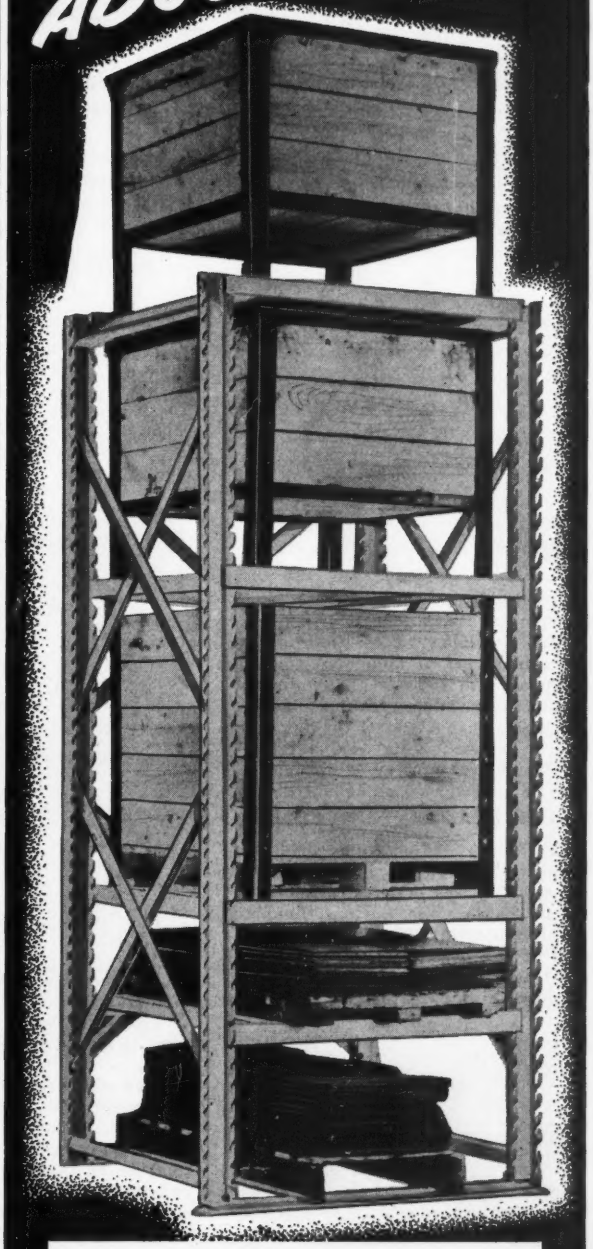

5, 7½, and 10 tons cap.
FORK LIFTS up to 18 ft.
BOOM HEIGHTS to 26 ft.
Gasoline or Diesel.
Solid Cushion Rubber or Pneumatic Tires.

*Agents throughout the world.*

SILENT HOIST & CRANE CO. 888 63rd ST. BKLYN 20 NY U S A



**TRULY ADJUSTABLE!**



This pallet rack is fully adjustable without the use of bolts or wrenches! Your fork lift truck can quickly and accurately position shelves to the proper spacing.

Racks can quickly be installed in banks of any desired length through the use of additional uprights (standard height 9') bolted to either end of the rack section shown. This is the solution to your pallet storage problem. Write us for details.

**RACK ENGINEERING COMPANY**

925 LIBERTY AVENUE

PITTSBURGH 22, PENNSYLVANIA

# NEW PRODUCTS

***For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13, or use postcard bound into this issue.***

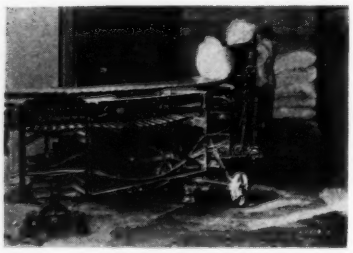
## FLOOR SWEEPER

**NP1**—A new Parker-Springfield Floor Sweeper, equipped with a rotating wall brush, has been introduced by the Parker Pattern and Foundry Co. The new model is available, exclusive of wall

brush attachment which adds six in. to sweeping swath, in models of both 20″ and 28″ sweeping widths. Both models are constructed of aluminum and are equipped with 10.25 x 150 semi-pneumatic tires. Other features include handles of seamless steel tubing; completely enclosed gears; and a removable brush reel, nine in. in diameter.

## CAR LOADING CONVEYOR

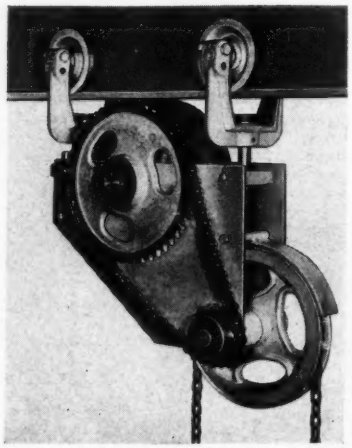
**NP2**—This "V-3" machine, manufactured by Manierre Engineering & Machinery Co., was designed for loading 100-lb. bags, boxes, cartons, bundles, etc., into box cars. The equipment consists of five five-ft. sections for single car loading, or seven five-ft. sections for loading on two tracks. The top of



the conveyor is 3′8″ or 4′8″ high depending on the height to which bags are to be piled in the car. Either model is furnished with an elevating conveyor that is adjustable to a man's shoulder height. For cement, limestone or other smaller 100-lb. bags, which are not piled over 4′6″ high from the floor, the machine is furnished with a deck at the discharge end in place of the elevating conveyor. The conveyor will travel around a 6-ft. radius curve and is driven into and out of cars by three ½ H.P. gearhead motors under the control of the operator at the discharge end of the machine.

## HAND CHAIN MONORAIL TRACTOR

**NP3**—A new drive unit of compact design for propelling monorail carriers along an overhead track has been introduced by the American Monorail Co. It operates through a simple hand chain and sprocket arrangement. Loads up to track capacity can be moved along the track with this tractor at the



rate of one ft. per each 28½″ overhaul of the hand chain. Normal movement of a one-ton load on a monorail carrier is made with a 10-lb. pull at the rate of 100 ft. per minute. The unit is recommended where electric power operation is inaccessible and where tractor movement of a monorail load is advisable due to high elevation of track, precision spotting of load or excessive weight. Traction, independent of weight, is obtained by contact of the rubber drive wheel against the bottom of the monorail.

## BATTERY VENT PLUG

**NP4**—The Gould Storage Battery Corp. has announced the "Televel", a new translucent plastic vent plug, which indicates the need of water by a battery. Electrolyte levels are determined without unscrewing the unit. According to the manufacturer, unnecessary watering is avoided, filling is assured when required, passed-over cells are detected, and better supervision results. The plug has a cylindrical element which projects down into the electrolyte. The portion of the element which extends into the solution is cone-shaped. When the electrolyte is at the correct level, the cone is completely covered, so that light waves traveling down the element are absorbed into the solution and not reflected. The top of the plug shows a black circle, indicating that no water is required. When the electrolyte is low, light is reflected and a white circle appears, indicating the need of water.

## POWERED HAND TRUCK WITH REVOLVING FORKS

**NP5**—The Yale & Towne Mfg. Co. has announced the latest accessory to its line of Worksavers, battery powered hand trucks. A non-tilting fork model has been equipped with a revolving fork carriage which rotates 360 degrees for such tasks as emptying scrap bins, dumping small parts from one bin into

another, pouring ingredients into mixing or batching equipment, loading tumblers, or performing other jobs where the load must be emptied from one container to another. Bins used in conjunction with the unit have short angle iron lugs welded to their sides to form a slot into which the forks of the truck fit. The rotating mechanism is operated by a lever in front of the mast of the truck. The non-tilting model is available in 1000 and 1500-lb. capacities. Fork elevation is 60 ins.

## HYDRAULIC CRANE SCALES

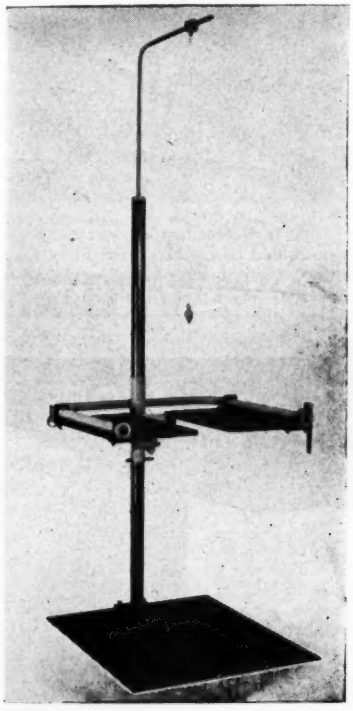
**NP6**—A standard line of hydraulic crane scales is being produced by The A. H. Emery Co. Three models of the unit are available. Model EU-20-T in any one of eight load capacities from 0 to 1000 lb. to 0 to 10,000 lb.; Model Eu-40-T, 0 to 12,000 lb., 0 to 15,000 lb., and 0 to 20,000 lb.; and Model EU-60-T, 0 to 25,000 lb., and 0 to 30,000 lb.

The models are designed primarily for measurement of loads as they are handled by a crane, although they are easily adapted for other forces—and/or load-measuring applications. A hydraulic cell converts force into corresponding fluid pressure which is connected to a pressure indicator, calibrated to read in lb. of load on the scale. Three dial sizes are available, 8½", 12" and 16" in diameter.

CIRCLE NUMBERS ON THE CARD AND MAIL!

## ACME DROP TESTER

**NP7**—The Acme Drop Tester, manufactured by the Acme Steel Co., is designed to determine the performance of shipping containers in transit. The tests which may be conducted with this device are the Flat Drop Test, the Edge



Drop Test and the Corner Drop Test. For the first trial, the solid fibre or corrugated container (filled with goods weighing up to 100 lb.) is placed flat on the panels of the Tester. The panels are released, and the container drops to the base plate. In the second trial the carton is dropped on one edge. In the third test the container is dropped on a corner. The testing equipment is manufactured with the following dimensions: width between arms, 29"; depth of panels, 24"; maximum testing height, 60".

## CORRUGATED STEEL STACKING BOX

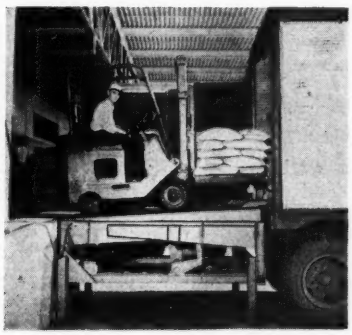
**NP8**—New corrugated all-steel welded stacking boxes, with four-way entry, have been announced by Palmer-Shile Co. The boxes also have a corrugated bottom. Crane lugs, stacking brackets and channel runners are optional, according to customers' specifications. The boxes are built to required dimensions, including underneath clearance. Load capacity and color of paint desired may also be specified.

## ROLL HANDLING POWER TRUCK

**NP9**—Manufacturers and handlers of paper rolls will be interested in the new Lewis-Shepard roll handling power truck. With a capacity of 2000 pounds, it picks up, moves and deposits rolls in a vertical position. Self-centering rubber lined grip pads line the two clampers which close by adjustable tension springs controlled by the operator. The arms are opened hydraulically but a safety device prevents the load dropping through the loss of hydraulic pressure. The roll clamper atatchment can be added to any of the company's power trucks. (Note: The capacity of this unit was erroneously stated as 1000 lb. in the May issue, and should read 2000 lb.—Ed.)

## MOTOR-OPERATED TRUCK DOCK

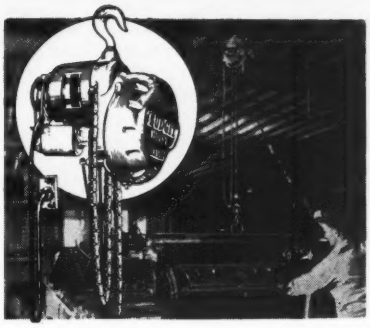
**NP10**—The Dock-Master, an electrically operated truck dock, is available from William Ehlers. The unit is so designed that the movable center section is completely encompassed in a framework of welded six-in. I-beams.



According to the release, the impact of a truck backing into the dock is taken by the framework and not by the movable ramp section. The lift cylinder of the unit is placed in a horizontal position as an integral part of the ramp. A con It is operated by a ¼-HP motor which receives current from an ordinary light socket.

## MOTOR GRADER

**NP11**—A new 34.7 HP. Model "D" motor grader has been announced by the Allis-Chalmers Tractor Division. This 2500-lb. machine has such features as tandem-rear-wheel drive, tubular frame design, and rear-mounted engine-transmission construction. It has been specifically engineered for light construction work, and is particularly designed to meet the needs of governmental bodies, contractors, loggers, mine operators, industrial plants, airports and rail-

# "My pal!"

**That is how a worker speaks of the little yellow 'Budgit' Electric Hoist. It is his pal for it makes his job so much easier by taking physical effort out of lifting whether it's machines or machine parts on production, assembly, or inspection lines. Production increases, costs decrease. By safeguarding the worker from all danger of sprained backs, torn muscles or ligaments, or a crippling rupture, the little yellow 'Budgit' is again his pal.**

**By increasing production all over a plant or factory, lowering operating costs, reducing compensation costs to a minimum, a little yellow 'Budgit' Hoist is a pal to management as well as the worker. 'Budgits' are complete lifting units in themselves. Ready to use the moment they're unpacked, you simply hang them up, plug into the nearest electric socket, and use. Operating costs are nil.**

**Why not prove what a 'Budgit' Electric Hoist could do for you in lowering costs, increasing production by installing one now?**

***Made in sizes to lift 250, 500, 1000, 2000 and 4000 lbs. Prices start at $119. Write for Bulletin No. 391.***

MAXWELL MANNING MOORE

'BUDGIT' *Hoists*

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of 'Shaw-Box' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of Ashcroft Gauges, Hancock Valves, Consolidated Safety and Relief Valves and 'American' industrial instruments.

roads. The "Roll-Away" moldboard rolls the dirt away from the blade and an abundant throat clearance from the moldboard to the circle bottom enables

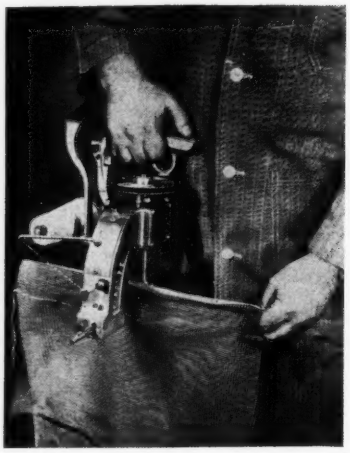
the new "D" to accommodate capacity loads that pass through the arched front axle without disturbing the rolling action of the load. Four working speeds range from 2.40 MPH to 18.61 MPH forward; reverse speed is 2.87 MPH.

## CASTERS

**NP12**—Light and medium duty drop forged casters are offered by the Midwest Precision Corp. They have 680 to 3000-lb. load capacity per set of four; four to eight-in. wheels are furnished in semi-steel, plastic and rubber. Double precision ball races, and cold pressed steel king bolt are also featured. Both the swivel and rigid caster have formed steel legs for strength and variance in height, according to the release.

## PORTABLE BAG CLOSER

**NP13**—This portable electric bag-closer, manufactured by the Dave Fischbein Co., weighs 10½ lb. The unit, furnished complete with one cone of thread, is operated on any 110 volt line, either AC or DC. It is equipped with a knife to cut the thread after the bag is closed. The bag closer is



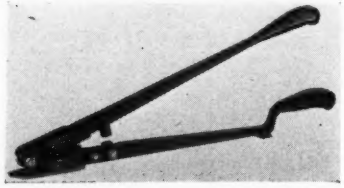
designed to handle any textile bag of usual construction regardless of weight or kind of fabric, whether asphalt treated or specially processed bags, and most types of paper bags. Operators are said to be able to close 200 bags an hour with this equipment. Stitches are spaced four to an inch.

## CHANNEL STEEL STORAGE RACK

**NP14**—"Storack", manufactured by the American Steel & Iron Works, is designed for use in industrial stock rooms and warehouses for accommodating drums, barrels, dies and tools. The rack is constructed of formed channel steel vertical frames, bolted or welded to desired specifications at the factory. The unit's frames are shipped ready-to-use with additional formed channel steel horizontal members up to 20 ft. in length (as needed) to connect up the frames into desired storage sections. Simple nut and bolt fittings, movable and adjustable in the formed channel members, are used to fasten the frames and horizontal members together into any desired length or spacing. Erection is accomplished quickly with ordinary tools, it is said. Models for light to medium loads and for medium to heavy loads are available.

## NEW STEEL STRAP CUTTER

**NP15**—A heavy duty strap cutter for cutting ¾", 1¼" .035 and 1¼" and



2" .050 high tensile steel strapping has been added to the Brainard Steel Co.'s line of strapping tools and accessories. The tool has a specially designed flat

says Bert Good, Mgr. Los Angeles Interurban Transportation Company Largest Newsprint Handlers in Southern California

*Special nose design for easy loading, fast unloading.*

L. A. Interurban handles more than 200 tons of newsprint daily...it's always been difficult and dangerous. Now using **24 Melooz Trucks** they've made drastic reductions in accidents and damages...saved on handling time.

**THREE COST-CUTTING ADVANTAGES FOUND ON NO OTHER TRUCK!**

★ Adjusts instantly to the right balance for the roll, regardless of height, diameter or weight. ★ Carries **ALL** the weight, relieves the operator of strain, prevents accidents, hernias, damage to costly paper rolls. ★ Streamlined, completely maneuverable, yet built to stand up under two-ton loads in constant service. No better equipment for close quarters, freight car or trailer truck handling, or warehouse, loading dock and press room needs.

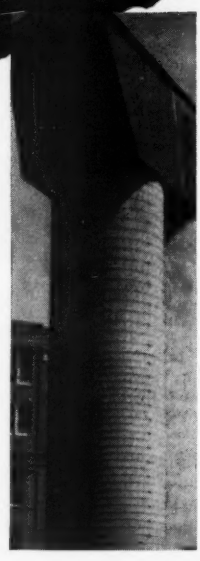
*Write for illustrated booklet. Address Department F8*

Some distributor territories still open. Details on request.

MELOOZ *Manufacturing Company* INC.
4730 AVALON BOULEVARD, LOS ANGELES 11, CALIFORNIA

MATERIALS HANDLING MADE EASY

THERE'S ROOM ALOFT



If ground is too limited to scatter materials all over the lot, there's room upwards for storage in Neff & Fry super-concrete stave silos. It's better anyway to store flowable bulk materials out of the weather.

The construction of Neff & Fry storage bins assures service for a generation or longer with virtually no upkeep expense. The super-concrete staves are dense, smooth, enduring. They interlock to form strong, tight joints. Each tier is bound with high-tension steel hoops.

Hundreds of N & F bins are in use for storing cement, chemicals, coal, fertilizer, grain, gravel, lime, sand, sawdust, seeds, water, wood pulp, and numerous other materials.

Would you like to have our catalog which tells the whole story? A copy is yours for the asking.

THE NEFF & FRY COMPANY
CAMDEN, OHIO

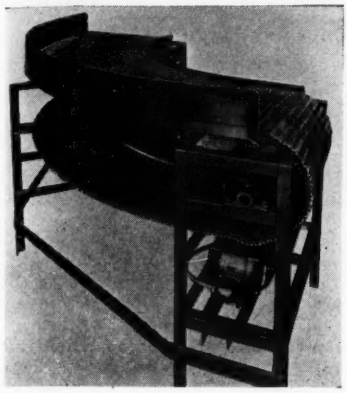
SUPER CONCRETE STAVE

NEFF & FRY STORAGE BINS

lower jaw which allows an operator to cut strapping at a fast rate.

## CURVED POWERED CONVEYOR SECTION

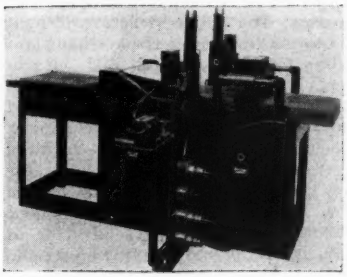
**NP16**—The Leeds Flat-Flex Conveyor is a powered flat unit which, according to the release, can travel around almost any desired curve. It is manufac-



tured by The Leeds Electric & Mfg. Co. Through the use of a specially designed conveyor chain, a balanced weave wire mesh belt is guided around most curves, and at the same time wear on the edges of the belt is eliminated because they do not drag against guides. It is further stated that the conveyor may be used in conjunction with other flat conveyors, or the entire line, including straight and curved runs, may be continuous.

## AUTOMATIC STAPLE MACHINE

**NP17**—The International Staple and Machine Co. has released Model B2H1, which automatically and simultaneously staples two sides of telescope cartons. This model operates on the "retractable anvil" principle, which allows any filled fibre or corrugated carton to be stapled from the outside, tops and bottoms (or both sides) simultaneously. No operator is needed to run this machine when cartons of the same



size are being stapled; only periodic loading of the staple magazine is necessary. The equipment can be manually adjusted for variations in carton sizes. One thousand cartons per hour may be closed on this machine, it is said.

## SEATS FOR INDUSTRIAL MACHINERY

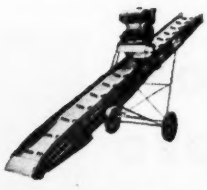
**NP18**—The Streator Dependable Mfg. Co. has redesigned its line of seats for industrial machinery. The seat and cushion frames are now of automotive type welded steel construction. New, patented fasteners firmly secure the waterproof leather-fabric cover which has a special plastic surface. Seams of the covers are placed at points of least wear. The cushion is removable and rests on steel rub plates that are said to prevent damage to the seat covering. The cushion is heavily padded and filled with nine high-tensile coil springs; each spring is secured four ways by wire stays. The springs are supported by stiff reinforced steel channels. Seats are made to fit all types of industrial equipment as well as farm tractors and agricultural implements.

## WIRE ROPE UTILITY HOIST

**NP19**—The new, Robbins & Myers Type "J" Wire Rope Hoist is the latest addition to its line of industrial hoists. The units are suitable for stationary, hook, or trolley mounting in small shops, on production floors, and in receiving docks and loading areas. They are available in ¼, ½ and 1-ton capacities with pendent rope or push button control. All models are equipped with totally-enclosed, ball bearing motors. An electrically-activated, shoe-type motor brake provides instantaneous stop-


HAISS **FOR 57 YEARS BUILDERS OF QUALITY MATERIAL HANDLING EQUIPMENT**

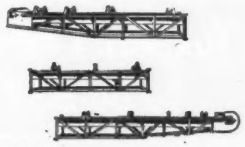
CAR UNLOADERS for unloading hopper bottom cars. Models 483-484. Belt or Drag.



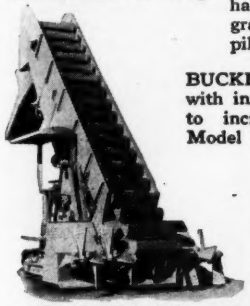
FLAT or TROUGH BELT CONVEYORS for handling coal, coke, sand, gravel, etc. to trucks or piles. Models 481 & 482.

DRAG CONVEYORS for handling all sizes of coal and coke. Model 486.

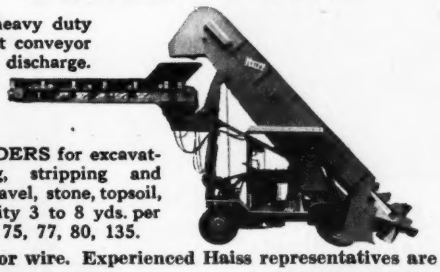
PACKAGE CONVEYORS for handling bags, boxes, crates, cartons, hampers, etc. Model 485.



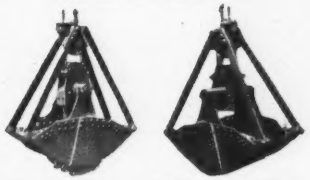
SECTIONAL CONVEYORS made in easily assembled individual sections. Portable or stationary for handling all bulk materials. Model 487.



BUCKET LOADERS, heavy duty with integral swivel belt conveyor to increase zone of discharge. Model SBC.



BUCKET LOADERS for excavating, rehandling, stripping and loading sand, gravel, stone, topsoil, coal, etc. Capacity 3 to 8 yds. per minute. Models 75, 77, 80, 135.



Heavy Duty or Light Duty Clamshell Buckets for high speed excavating or rehandling.

For further information, write, phone or wire. Experienced Haiss representatives are located in all principal cities.

**GEORGE HAISS MFG. CO., INC.** division of **PETTIBONE MULLIKEN CORP.**

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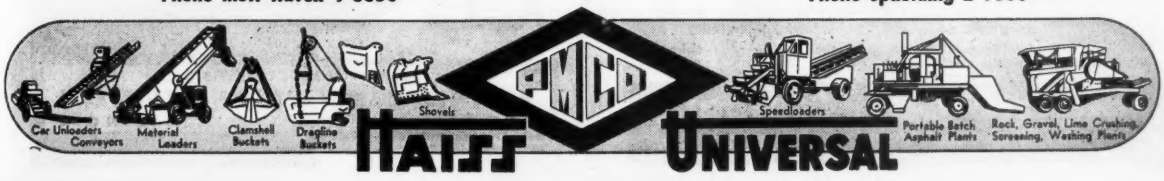
Phone Mott Haven 9-3650

4700 W. Division St. CHICAGO 51, ILL.
Phone Spaulding 2-9300



ping; an oversized load brake with non-reversing clutch automatically controls speed when the load is lowered. Other features include heat-treated gearing and ball bearing; oil-bath construction; high quality plow steel cable; safety-enclosed hook blocks; and drop-forged steel hook swivels.

CIRCLE NUMBERS ON THE CARD AND MAIL!

## NEW TOWING TRACTOR

**NP20**—The Clark Equipment Co. has introduced a new towing tractor developed especially for wholesale grocery warehouse operations. The new three-wheeled vehicle, the Clarkette-5,

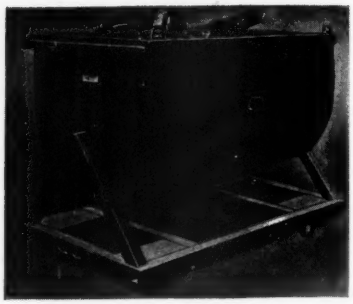
has a 500-lb. drawbar pull. The model is said to be able to draw up to four trailers with a speed of one to 4.9 MPH. The driver operates the vehicle while standing, which makes for ease in mounting and dismounting. When selecting orders, if several items are in close proximity to each other, he can walk alongside the machine, operating it with his right hand.

## LIGHT-DUTY OVERHEAD CONVEYOR

**NP21**—The Jervis B. Webb Co.'s new "Junior" Conveyor is a small overhead conveyor designed for light jobs. The conveyor (using 2" pitch chain) travels on a three-in. "Junior" I-Beam which is held by bolted brackets; these are attached either to supporting angles or tie-rods. The entire structure is light and can be hung from the average plant ceiling. Trolleys, chain and attachments are said to be strong but light. The two-in. pitch permits placing of loads at intervals of two ins. or more, depending on the clearance required between the loads themselves. Brackets are drop-forged of high carbon steel; wheels have antifriction bearings. "H" attachment or clevis is made of formed steel. Load carrying hooks and carriers are available in a wide variety of types.

## PORTABLE DUMP BOX

**NP22**—A new portable dump box with round bottom is announced by Equipment Mfg. Co. The new unit is constructed of heavy sheet steel completely reinforced. Hand holds provide for tilting the box 90°. The round bottom facilitates unloading as well as cleaning. Safety catches hold it secure-



ly at loaded or tilted positions. The frame and truck are of square welded tube equipped with casters on bearings. Tow plates on the frame are optional. The box is designed for the handling of small parts, bulk materials and scrap.

**Better, Bigger Directory**

New, improved features will be incorporated in the 1949-1950 FLOW Directory. More definitions and sketches; revisions for easier and more complete reference. Copies are $5.00 each.


You don't have to be BIG to be EFFICIENT!

847550

New UNLOADER-LOADER Team For All Materials — All Sizes of Plants

The new B-G 363 Unloader-Stockpiler-Loader is an all-purpose machine; handles all bulk materials—up to 200 T.P.H. Also handles bagged and packaged goods. All new, heavy duty, highly portable! The 358 Hopper Car Unloader clears a car of material in 45 minutes! Positive, non-slip hopper-bottom car unloading for all bulk materials. Easy to spot over rails or in pits. Truck-towed portability.

Send for new Bulletins! On the 24" Belt Conveyor, Bulletin 363. On the Hopper Car Unloader, Bulletin 358. Address

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Finest quality cured-on tires of natural, oil resistant, or hard rubber . . . semi-pneumatic and cushion tires . . . pressed-on tires for industrial trucks . . . applied to wheels supplied by you. Wide range of sizes . . . prompt delivery. Write for details.

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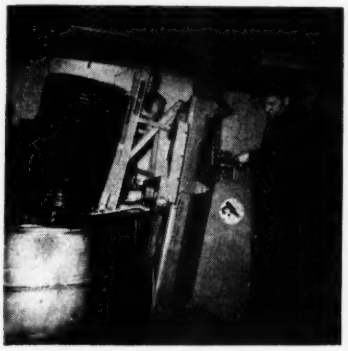
RUBBER PRODUCTS DIVISION
PHOENIX MANUFACTURING COMPANY
JOLIET ILLINOIS

NEW TILT-GRAB—A new attachment for handling drums, barrels, bales and crates, shown here, has been devised by the Terminal Warehouse Co., of Philadelphia. The Tilt-Grab employs the normal tilt of the fork truck mast to operate a grappling arm which seizes the drum by the top and inclines it toward the fork truck. Short forks run under the drum in its inclined position and, when elevated, the lower edge falls



**TILT-GRAB with drum in elevated position.**

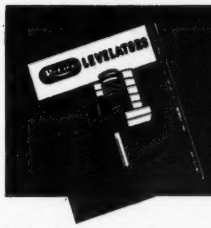
into a groove in the forks. The drum is set down by bringing the mast forward again. This motion sets the drum down with its bottom horizontal, and releases the grapple. The fork is withdrawn by backing up the truck.

The photos reproduced here show the hook for the rim of an oil barrel, but the clasp is also adaptable to flat top drums, and another type of hook can

**FRONT VIEW of short fork on the Tilt-Grab.**

be used for bales and cases. One of many uses of the Tilt-Grab device is foreseen in the loading and unloading of box cars of cooperage.

The Tilt-Grab was invented by B. A. Dickson, material handling engineer of the Terminal Warehouse Co., and patents have been applied for by that company. It is expected that the device will be produced by fork truck manufacturers under license agreements.—**Courtesy, C & D Batteries, Inc.**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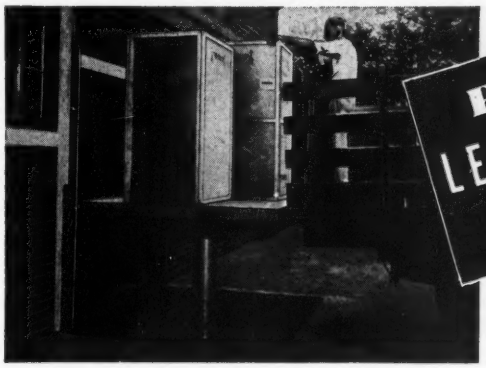
Write now for new Rotary Catalog RE-202. It shows how to slash labor costs by using Levelator Lifts for loading and unloading jobs . . . **and for feeding and receiving materials from presses, shears, etc.** Levelator car rises quickly and smoothly as oil is forced into powerful hydraulic jack* by simple electric pumping mechanism or compressed air. Operation safe, dependable, economical. Installation simple. And you can get prompt delivery now for the first time in 7 years.



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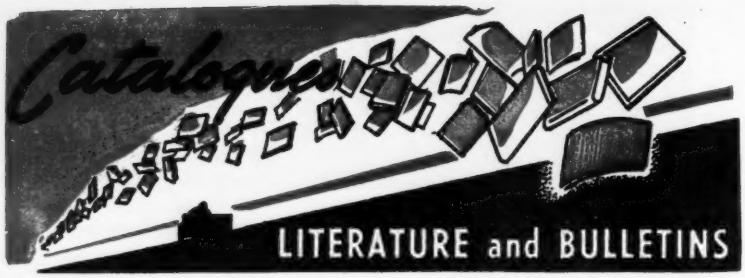


**The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.**

**25—Vibratory Weighing Equipment . . .** The Syntron Co. is offering a 15-page catalog section on its line of vibratory weighing equipment. Included are "Weigh Flow" Gravimetric Feeders for accurate, continuous flow feeding by weight; batch and bag weigh machines, and automatic batch weigh plants. The "Gravimetric" feeders are constructed so that a scale automatically corrects any variations in the load on a belt electrically by varying the voltage to the feeder's electro-magnet. Machines are available in a range of styles and sizes, with capacities of from ounces to 600 tons per hour. Other models are available with remote setting, indicating and recording control; and with built-in supply hopper and hopper vibrator. Other pamphlets issued by the company contain information on vibratory feeders, vibratory feeders by electro-magnet vibration, pulsating magnet and electric vibrators. Construction and operation details are illustrated with cutaway drawings and photos; specifications and operating data are included.

**26—Pallets . . .** The National Pallet Corp. has published a new booklet, "National Pallets," which illustrates and describes many types of wooden pallets made by the company for industrial and commercial uses. Included are data on standard, four-way, four-way block and cargo types. Other designs include the collapsible rack pallett, stationary rack pallet, utility box pallet, and expendable pallets. Information is included on construction, size and design. The text is generously illustrated with photos and line drawings.

**27—Power Sweepers . . .** Annual savings of more than $5,000 in maintenance costs may be achieved through the use of power sweepers, according to the Wilshire Power Sweeper Co.'s new comparison chart. Facts are also given on the time saved by riding and sweeping through the use of a power sweeper with a riding sulky attachment. Figures are included on the time required to amortize an investment in a power sweeper, which is said to vary from four to 12 weeks.

**28—Powered Handling Equipment . . .** A new eight-page brochure has been issued by the Automatic Transportation Co. The literature describes the Automatic Skylift and Transporter lines. The latter include Transporters, Transtackers, Transtractors, and the Transrider Stacker. Photographs of all models are shown, and physical characteristics and performance data are given.

**29—Lift Trucks . . .** Bulletin 4861, issued by the Barrett-Cravens Co., presents the Barrett "Ox" line of electric lift trucks. The new models are designed to handle heavy skid, pallet and truck loads. These three units are described with full specifications, and illustrations include operating views and closeups of electrical and mechanical features. Information on batteries and chargers is also given. The Power Ox, an electrical lift truck with 4000 and 6000-lb. capacities is available with lifting platforms 20″ to 25″ wide and in a wide range of lengths. The Pallet Ox is available with similar capacities and is equipped with fork lengths from 36″ to 60″, to handle either single or double face pallets. The Tractor Ox is designed for towing or pushing operations where trailers are used to handle materials. It has a 700-lb. drawbar pull and 20,000-lb. rolling capacity.

**30—Spray-Pumps . . .** The Stewart-Warner Corp. is offering a 24-page catalog illustrating and describing its Alemite Versatal Spray-Pump equipment. The units is designed to fit the top of any 55-gallon capacity drum. The air-operated pumping unit picks up material from the bottom of the drum and forces it through hose lines under hydraulic pressure. The equipment may be used for painting, roofing, extruding, caulking and sealing. It may be employed by contractors, painters, maintenance men, manufacturers, roofers and transportation men. The literature contains many "on the spot" photos, line drawings, engineering data and general operating descriptions.

**31—Material Handling Equipment . . .** "Time Savers" is the title of Bulletin 4881, published by the Barrett-Cravens Co. It presents the various types of material handling equipment which supplements the company's basic lines; lift trucks, elevators and storage racks. Pictured and described are the Case-Y truck, a light-weight, all-welded hand truck for handling cases, kegs and bags, also barrel trucks, pick up pallets (for use with hand trucks), chisel trucks, reel trucks, rockeracks, for draining barrels and drums). Also included in this buleltin are carboy pourers, steel barrel skids, die tables, stacking frames, bar stock racks, the Nifty lifter and skid system, rectangular and triangular dollies, and Steeleg skids. Lift trucks, portable elevators and storage racks are also shown.

**32—Battery Chargers . . .** From the Federal Telephone and Radio Corp., a 12-page, two-color folder on its line of selenium rectifier industrial truck battery chargers. Many models, designed for lead-acid and nickel-iron-alkaline batteries are pictured and described. Features of the company's charging equipment include dual-purpose charging; automatic two-rate for lead batteries; metered charging for nickel-iron-alkaline batteries; AC converted to DC by selenium rectifiers; compact design, and automatic charge recycling control. Each model is pictured with individual operating features, specifications and engineering data.

**33—Floor Resurfacing . . .** United Laboratories, Inc. has issued a brochure on Plastic Rock, floor surfacing material. The material is said to be sanitary, noiseless, dustless, easy to clean and easy to apply. It is in use by the government, institutions, railroads, industrial contractors and the automotive industry. Ordinarily, only a ⅛″ to ½″ thickness of the material is said to be necessary. The publication contains general information and more than a dozen application photos.

**34—Telescopic Conveyors . . .** Portable telescopic conveyors are the subject of literature released by The Wilkie Co. Sections of five, 7½ or 10 ft. in length lock together when fully extended so that there is no stepdown between sections. A specially designed locking arrangement gives correct positioning of the sections, with no bolts or clamps utilized. The conveyors are made in either wheel or roller types. The units are said to be ready for use immediately, requiring no set-up time, and are designed for loading and unloading vehicles and for in-plant moves.

**35—Shipping Pallets . . .** A folder from the Acme Pallet Co. describes its line of "Zeferwate" shipping pallets. According to the release, the units may be reused or act as expendable pallets. Block construction permits eight-way entry. Top deck, bottom deck and

stringer boards are ⅜" or ⅝" thick, blocks 3" x 4" x 4" and larger. The pallets are assembled with cement coated drive screw nails through deck boards into blocks and clinched nail construction of deck boards to stringer boards at stringer spans. Pallets are constructed of oak, maple, beech, birch, ash and similar hardwoods. Line drawings, features and specifications are included.

**36—Caster & Wheel Manual . . .** The Darnell Corp., Ltd., has issued a 192-page manual on its line of casters and wheels. Hundreds of line drawings and photos show industrial, institutional, chair, furniture and other casters. Cutaway drawings explain engineering and construction features. The various sections are arranged for easy reference—for example, medium and heavy duty groupings in the industrial sections. Individual features, specifications and operating data on each model are given. Over 200 units are described in this comprehensive manual.

**37—Portable Powered Belt Conveyor . . .** Bulletin No. 220 gives complete information on the new Standard Extendoveyor, a portable powered belt conveyor. The unit can be extended or retracted quickly at the will of the operator. The conveyor is designed for use in trailers, trucks, box cars, warehouse areas, and for jobs where it is desirable to change the point of discharge often. Two-way and one-way stretch models are available. The literature contains numerous photos, line drawings, specifications and general operating information.

**38—"Load Dispatcher" . . .** From the Schwitzer-Cummins Co., a booklet containing data on its Load Dispatcher line of pallet carriers, including both the fixed platform and hydraulic lift platform type vehicles. Photos show these models performing various tasks. Engineering drawings and detailed specifications accompany each model. Components are also illustrated. A single lever controls the operation of the Load Dispatcher. At one end of its throw, the engine is disengaged and the brake set; by moving the lever in the other direction, the engine is engaged and the unit is set in motion.

**39—Shovel Cranes . . .** The Link-Belt Speeder Corp. is offering a series of bulletins on its line of shovel cranes. Both tire-mounted and crawler-mounted units are described. Photos show "on-the-spot" views as well as components. Featured attachments include shovels, draglines, clamshells, trench hoes and pile-drivers. Larger models are shown feeding bins, trucks, rearranging stockpiles, spotting heavy machinery, while smaller units are shown engaged in in-plant and lighter in-the-yard operations. Detailed specifications, engineering data, line drawings and operating features of each model are included.

# OPPORTUNITIES

## *Men wanted Jobs wanted Lines available*

**Rates: for "Positions Wanted" $4.00 minimum, limit 25 words. For all other classifications $4.50 minimum for 25 words, each additional word 15c; boldface type or all capitals, $7.50 minimum for 25 words, each additional word 20c; limit 50 words. Box address count as five words. All insertions are payable in advance.**
**These classified columns are not intended for the advertising of new products by manufacturers, their representatives, or their distributors. These columns are limited to Help Wanted or Positions Wanted advertisements, and for the offering of used equipment by the users of such equipment.**

### FOR SALE

CAR SPOTTER SALE: Electric Car Puller Hoists complee with Timken Tapered roller bearings, bronze work gear, sturdy steel base, vertical capstan; totally enclosed ballbearing moor. (3 phose, 60 cycle, 220-or-440 volts—other currents available). Speed approximately 40-ft. per minute. *Model 5-BB (5HP) 5000 lbs. Starting pull—$388; *Model 7-BB (7½HP) 7000 lbs. starting pull—$488; *Model 10-B (10HP) 10,000 lbs. starting pull—$587. Bernstein Brothers, Manufacturers-Distributors, "Since 1890" Pueblo, Colorado.

HEAVY DUTY, FARQUHAR CONVEYOR, 24" wide, 27' long—in excellent condition. Located Cleveland, Ohio—can be inspected. Price reasonable. Communicate: Purchasing Dept. H. J. Heinz Company, Pittsburgh 30, Pa.

BOXES & lids, 10,00 softwood, inside dimensions 14" long 10" wide 8½" high. Tops, sides ½" thick, ends ¾" with two cleats. Columbia Supply Co., Swan Island, Portland 18, Oregon.

FOR SALE: 4 Lyon & Raymond Hand Pallet Jacks Model LP 1¾-48-27 with rubber tired wheels. Slightly used. Cincinnati Merchandise Warehouse, Inc., 7 West Front Street, Cincinnati, Ohio.

MATERIAL HANDLING EQUIPMENT

1500 skids 32x54, 7 lift trucks, 100 four-wheel trucks 36x40, 20 live skids and 7 lift Jacks. Ideal for canneries or warehouses. Lee & Cady, Box 914, Toledo, Ohio.

### EQUIPMENT WANTED

WANTED

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| Fork Lift Trucks | Krane Kars |
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### REPRESENTATIVES WANTED

Manufacturer if overhead cranes, monorails, etc., wants representatives in certain New York, Minnesota, Michigan, Pennsylvania, Indiana and Middle Western territories. Write giving details your organization and previous experience in the field, if any. Box 8149.

**40—Filtering Equipment . . .** Honan-Crane Corp. has available folders concerning equipment designed to filter and handle oils and coolants used in metal working operations. Equipment is available for one machine or systems of over 100. The folders contain case studies, solutions to problems and cost figures. Photos, engineering data and installation features.

**41—Stock Sprocket Catalog . . .** A new catalog, No. 709, describing its line of Stock Sprockets and Chains has been printed by the Diamond Chain Co., Inc. Its line consists of many types of sprockets and single and multiple-strand roller chains. The 40-page literature is richly illustrated and contains about 100 tables giving dimensions and other information. Sections are devoted to data on the selection of various sizes and types of chain and sprockets for different industrial applications. Line drawings and technical information are given for each model. Other sections are entitled "Installation Recommendations", "Lubrication Recommendations", "Chain Length Calculations", "Service Classifications", and "Service Factors".

**42—"One Wheel Shay" . . .** The Shaylow Co. has issued a catalog sheet showing five of its steel barrows. Both models are pictured together with specifications and important features.

# Literature Available From Advertisers In This Issue

***(Check corresponding numbers on the enclosed card for the free literature listed below)***

**A-1, SIGNODE STEEL STRAPPING CO.** will send you special bulletins, describing its tools and steel strapping applications.

**A-2. THE WAYNE PUMP CO.** "The Wayne Auxiliary Unit Plan" gives details on the company's line of air compressors.

**A-3. TRUSCON STEEL CO.** Booklet No. P-70 describes its line of standard and specialized steel boxes and skids.

**A-4. TOWMOTOR CORP.** is offering its "Model Specification Folder" which details 10 models of fork trucks and accessories.

**A-5. MOTO-TRUC CO.** will send literature on its tractors and powered pallet, platform, tin plate and high-lift trucks.

**A-6. EUCLID CRANE & HOIST CO.** Literature is available describing and illustrating the company's line of cranes and hoists.

**A-7. BARBER-GREENE CO.** Bulletin 363 describes the 24" Belt Conveyor while Bulletin 358, the company's Hopper Car Unloader.

**A-8. COLSON EQUIPMENT & SUPPLY CO.** An eight-page catalog details the Cesco Dumper for dumping bags, bulk or drums.

**A-9. ANCHOR STEEL AND CONVEYOR CO.** will send Bulletin 36-1 on its Pan Type Quench Tank Conveyor and Bulletin A-46 on its Overload Safety Cut-out.

**A-10. KIMBERLY-CLARK CORP.** is offering an illustrated Kimpak packaging guide on its line of protective packing materials.

**A-11. HOMER MFG. CO.** Bulletins describe the company's Permanent Magnetic Non-Electric Separators for removing tramp metal.

**A-12. PHOENIX MFG. CO.** will send details of its custom molded rubber tires in a wide range of sizes and types.

**A-13. THE SISALKRAFT CO.** is offering details on the Fibreen Method of Unitized Loading and a sample of reinforced waterproof paper.

**A-14. RACK ENGINEERING CO.** Descriptive information will be sent on the company's fully adjustable pallet rack.

**A-15. SILENT HOIST & CRANE CO.** Bulletin No. 65 contains information on the Lift-O-Krane, combination lift truck, crane and ram truck.

**A-16. NEFF & FRY CO.** A catalog gives data on super-concrete stave silos, their construction features and many industrial applications.

**A-17. GEORGE HAISS MFG. CO., INC.** will send complete information on its line of conveyors, clamshell buckets, and bucket loaders.

**A-18. A. H. EMERY CO.** is offering descriptive literature on its hydraulic crane scales with capacities to 30,000 lb.

**A-19. MECHANICAL HANDLING SYSTEMS, INC.** Catalogs give details of its portable storage racks which can be handled with lift trucks.

**A-20. ALLIS-CHALMERS TRACTOR DIVISION.** Literature contains information on the IB Tractor which may be used with a wide variety of attachments.

**A-21. CONVEYOR SPECIALTY CO., INC.** A catalog gives specifications and operating data on its gravity roller, belt and chain conveyors.


Handle Your Materials with load-floating cost-cutting Colson Trucks

More stuff handled with less effort and cost when your plant is equipped with Colson trucks. Hand trucks, barrel and drum trucks, platform trucks, dish trucks, Lift-Jack Systems, dollies, wheels and casters —all designed for ease of movement, floor saving, extra durability. Less "push" means popularity with workers, profits for you. Write us or consult your phone book for the local Colson office.

WRITE TODAY FOR FREE 56 PAGE CATALOG

Colson Drum Truck model #6055-65, has ballbearing 10" double steel disc type wheels, demountable cushion rubber tires, rugged lightweight tubular steel frame. Chimb hook locks semi-automatically.

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Yale & Towne Mfg. Co. ..... 4

*For efficient "on-the-crane" weighing . . . saves time and material handling.*

**Direct reading—capacities to 30,000 lb. Guaranteed accuracy . . . each scale calibrated at factory. Prices from $882 to $1385. Complete literature upon request.**

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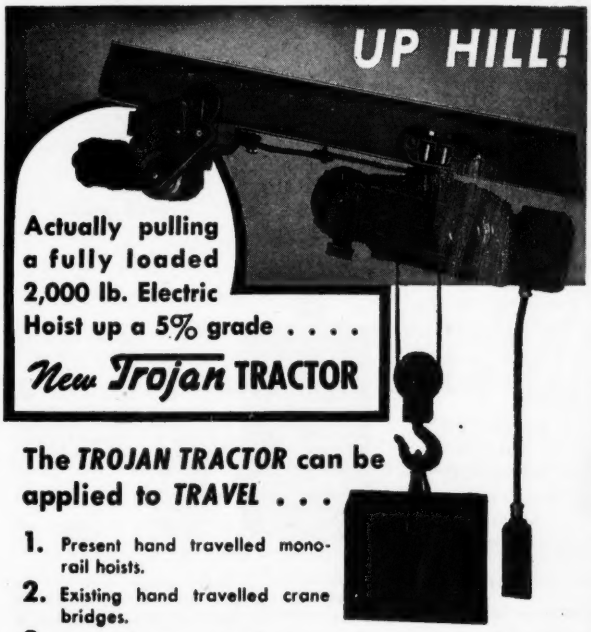


**Actually pulling a fully loaded 2,000 lb. Electric Hoist up a 5% grade . . . .**

***New Trojan* TRACTOR**

**The *TROJAN TRACTOR* can be applied to *TRAVEL* . . .**

1. Present hand travelled monorail hoists.
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3. Monorail conveyor lines.
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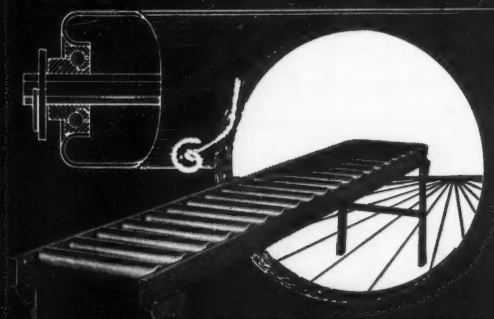

**THESE 5 FEATURES MEAN MAXIMUM PERFORMANCE**

1. Smooth, rolled edges on frame eliminate cuts and torn clothes.
2. Ball bearings are removable for replacement.
3. Hex shafts prevent turning in the frame.
4. The liveliest rolls — the product of correct "balance."
5. 11 types — roll capacities 50 to 150 pounds per roll.

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**36 Newport Ave. North Quincy 71 Mass.**

Write today for our complete catalog on Gravity Roller, Belt and Chain Conveyors

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# MATERIALS HANDLING EQUIPMENT

*Designed to do Specific Jobs Better*

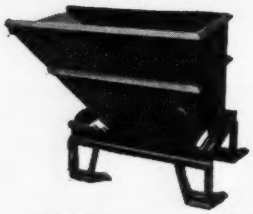
NS-298
$46.50

**General Utility**
**Reinforced Sheet Steel**

## HAND DUMP TRUCK

*(About ½ Cubic Yard Capacity)*

Originally built to specifications for a large war plant to catch turnings from screw machines—also ideal for holding scrap and many other uses. Constructed of heavy sheet steel, reinforced with top edge flange. Stout welded round rod iron handle. Top measures 25¾" x 45", bottom 25¾" x 27", depth 17½", overall height 23". Equipped with two 8" semi-steel wheels, two 4" metal swivel casters. Weight approximately 125 lbs. (Other sizes can be furnished on special order.)



S-878A $130.00 (½ cu. yd. capacity)
S-878B $148.00 (1 cu. yd. capacity)

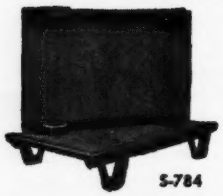
### Automatic End Dump

Fits any fork or lift truck. Saves labor—speeds production. Heavy steel plate, reinforced with heavy angles. Self-seating geared rockers.

B-426
$61.10

### Stock Checkers Truck

Combines generous capacity with flexibility. Self contained writing table and stationery rack—All steel welded construction. Four 8" rubber tired, ball bearing casters. Shelves 38" x 20". Wt. 190 lbs.



S-784

### Standard Platform

Hardwood top, metal armored, fully protecting wood and holding it securely. Built to meet customer's specifications.

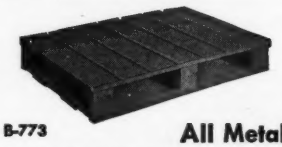
### Barrel Truck

**Loads Automatically**

Barrels weighing up to 1,000 lbs. handled with ease—sliding steel catch loads automatically. Heavy tubular welded construction—two 10" roller bearing wheels—22" wide overall—wt. 85 lbs.

S-911M $33.50 (metal wheels)
S-911R $38.50 (rubber tired wheels)
S-911P $45.00 (Pneumatic rubber wheels)

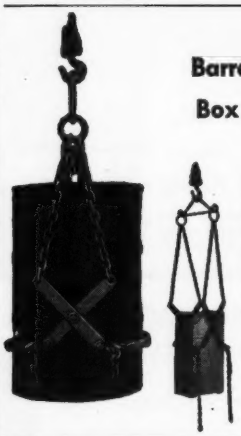
We design and build all types of trucks, skids pallets, platforms, racks, boxes, bins, tables, etc



B-773

### All Metal Pallet

4-way—for use with power truck or hand truck. Special rolled steel, corrugated for maximum strength. Note beveled pads to allow truck wheels to ride over easily.



### Barrel and Box Grab

For picking up any wood or steel barrel, box or container up to 40" diameter—2,000 lb. capacity. Rigid toggle construction—heavy welded steel chains—tongs of heavy bar stock. Weight 35 lbs.

NS-288
$55.25

When ordering give item number to prevent error. All prices f.o.b. Detroit, Mich., subject to change without notice.

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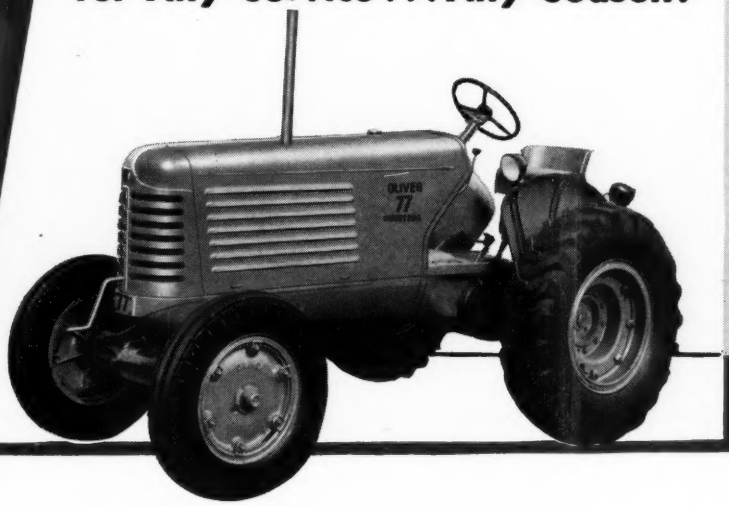
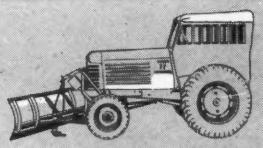
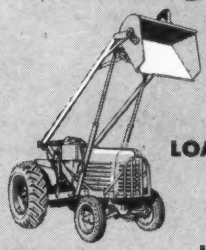
***for Any Service . . . Any Season!***



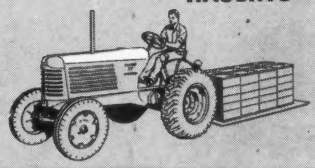
SNOW REMOVAL

SWEEPING



LOADING

HAULING



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